

SMD 101

H.264 Streaming Media Decoder



Extron® Electronics
INTERFACING, SWITCHING AND CONTROL

Safety Instructions

Safety Instructions • English

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Korean

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주의: 이 기호 ⚠ 가 제품에 사용될 경우, 장비와 함께 제공된 책자에 나와 있는 주요 운영 및 유지보수(정비) 지침을 경고합니다.

안전 가이드라인, 규제 준수, EMI/EMF 호환성, 접근성, 그리고 관련 항목에 대한 자세한 내용은 Extron 웹 사이트(www.extron.com)의 Extron 안전 및 규제 준수 안내서, 68-290-01 조항을 참조하십시오.

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. The Class A limits provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference. This interference must be corrected at the expense of the user.

NOTE: This unit was tested with shielded I/O cables on the peripheral devices. Shielded cables must be used to ensure compliance with FCC emissions limits.

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Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

CAUTION: Risk of minor personal injury.

ATTENTION : Risque de blessure mineure.

ATTENTION:

- Risk of property damage.
- Risque de dommages matériels.

NOTE: A note draws attention to important information.

TIP: A tip provides a suggestion to make working with the application easier.

Software Commands

Commands are written in the fonts shown here:

```
^ARMerge Scene, ,Op1 scene 1,1 ^B 51 ^W ^C  
[Ø1] RØØØ4ØØ3ØØØØØ4ØØØØ8ØØØØ6ØØ [Ø2] 35 [17] [Ø3]
```

```
Esc|X1*|X17*|X20*|X23*|X21|CE ←
```

NOTE: For commands and examples of computer or device responses mentioned in this guide, the character “Ø” is used for the number zero and “O” is the capital letter “o.”

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from ØØ8.132.18Ø.48: bytes=32 times=2ms TTL=32  
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx -t  
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

From the **File** menu, select **New**.
Click the **OK** button.

Specifications Availability

Product specifications are available on the Extron website, www.extron.com.

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Introduction

This section gives an overview of the user guide and describes the SMD 101 and its features. Topics that are covered include:

- [About this Guide](#)
- [About the SMD 101](#)
- [Features](#)

About this Guide

This guide contains installation, configuration, and operating information for the SMD 101.

In this guide:

- Codec or H.264 refers to the H.264/MPEG-4 Part 10 AVC codec.
- Stream can refer to audio, video, or both that is received by the SMD 101 and constantly decoded for display.

About the SMD 101

The SMD 101 is a compact, high performance H.264 decoder used in applications that require live AV streaming or file playback from files located on other network devices and shared. The SMD 101 can decode and display one SD or HD stream and output a single HDMI signal supporting resolutions up to 1920x1200 (60 fps, progressive). The video output can be scaled and its aspect ratio modified. The Extron SMD 101 is compatible with all SME 100 HD and SD encoder streaming protocols and resolutions.

The SMD 101 can be controlled using IR, RS-232, or Ethernet. Ethernet to RS-232 pass-through for display control is possible.

The SMD 101 decodes H.264/MPEG-4 AVC streams or clips and outputs HDMI video with embedded audio for display on any HDMI compatible device (see figure 1 on the next page).

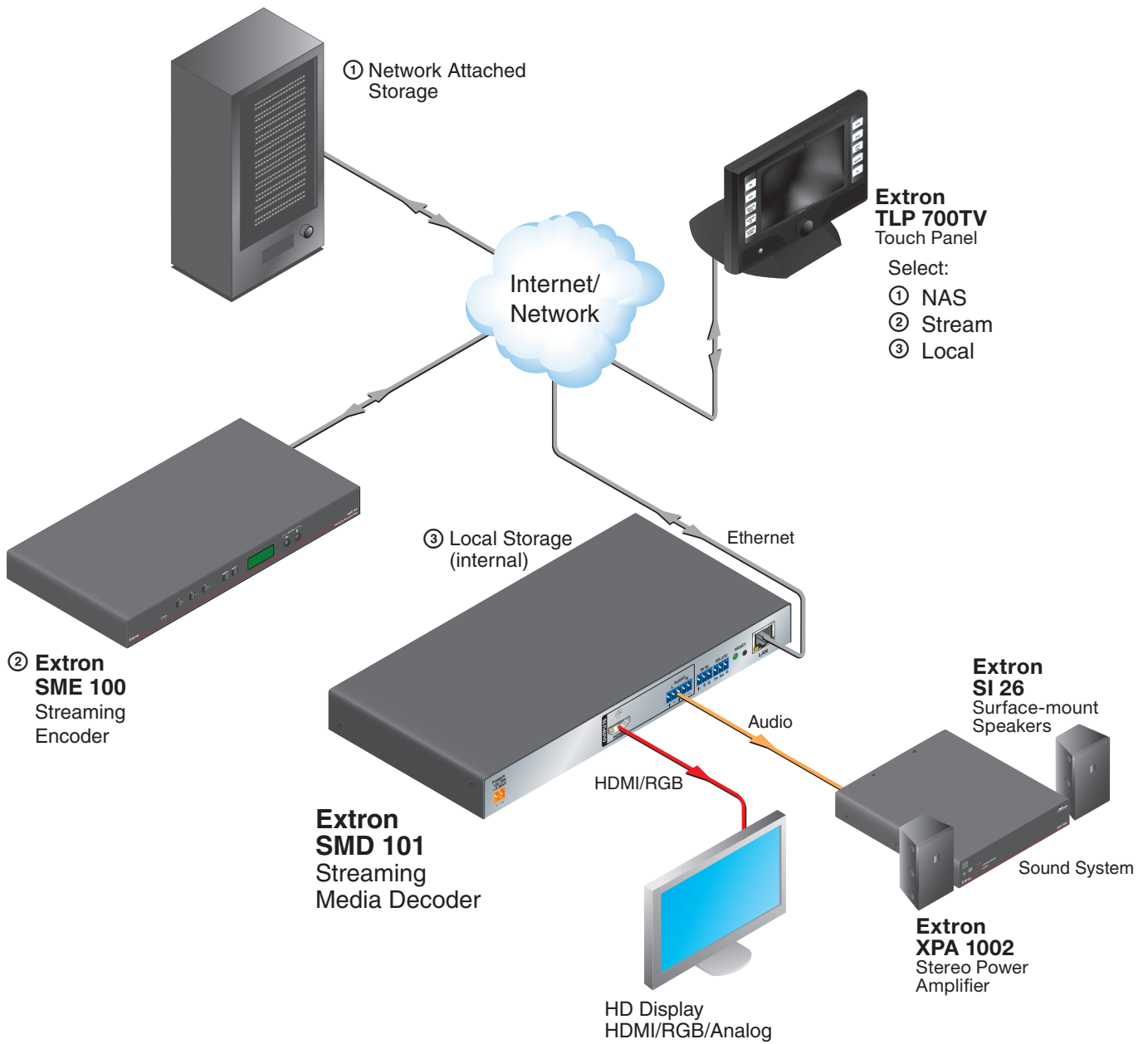


Figure 1. Typical SMD 101 Application

The SMD 101 can decode and display one SD or HD stream. The optional handheld IR remote control allows channel preset recall and channel navigation. The SMD 101 automatically detects transport and stream formats and decodes the content for presentation to the display.

A channel list can be defined that allows simple selection of individual streams. The user can import or export source selection data including URLs and associated data from the channel list. This is an extension of the configuration save or restore capability that can save box and IP configuration settings for the product as a separate xml file.

The channel list can be accessed with a remote control (not included) for selection and playing streams included in the list.

The SMD 101 decodes all common stream resolutions and frame rates.

NOTES: The SMD 101 does not support decoding of encrypted content.

The SMD 101 can be configured using a host PC or laptop connected to the front panel USB Config port, the RJ-45 LAN connector, or the RS-232 port (see [Remote Communication and Control](#) on page 57). A compatible web browser on a control PC connected to the same network as the SMD 101 can access the embedded HTML pages. A video confidence display allows image monitoring from the user interface while making configuration and control adjustments.

Video Output

Video output parameters are configured automatically for the connected display based on the display EDID, or can be configured manually using a browser and the video configuration page.

NOTE:

- The SMD 101 does frame rate conversion between the input stream frame rate and the output frame rate, scaling from the source resolution and output resolution, and aspect ratio between fit (zoom), fill, and follow as required.
- Fill and follow background, when necessary, is black.

The SMD 101 by default, automatically outputs video corresponding to EDID data from the connected display within the resolution and rate combinations (see [Output Resolution and EDID Support Table](#) on page 4). The output rates available are limited by the display capabilities. EDID data exchange is compatible with E-EDID V2.0 (EDID data structure 1.4) and EIA/CEA-861E.

Output Resolution and EDID Support Table

Resolution	23.98 Hz	24 Hz	25 Hz	29.97 Hz	30 Hz	50 Hz	59.94 Hz	60 Hz
640x480						10		11
800x600						12		13
1024x768						14		15
1280x1024						16		17
1366x768						18		19
1600x1200						20		21
1920x1200						22		23*
480p							24	25
576p						26		
720p						32	33	34 (default)
1080i						35	36	37
1080p	38	39	40	41	42	43	44	45*

NOTES:

- Numbers indicate the EDID preset resolution.
- * With reduced blanking.
- Highest resolution is 1920x1200 (158.25 MHz@50 Hz and 154 MHz@60 Hz*).
- Highest pixel rate is 1600x1200 @ 60 Hz (162 MHz).

For applications where the EDID settings do not provide or allow the desired results, select a video output from the table. Select a defined output rate combination supported by the display, or set the video output to match the input stream.

The output is muted automatically after a defined period of inactivity. Alternately, it is muted and unmuted under user control. Video mute settings are cleared during reboot or power cycle events (see [Configuration Page](#) on page 28).

Suggested PC Requirements

The suggested PC requirements to access the default web pages of the SMD 101 are listed below.

- **Hardware**
 - 2.0 GHz dual-core processor
- **Operating Systems**
 - Microsoft® Windows® XP or higher
 - Mac® OS® X® 10.6 or higher
- **Web Browsers**
 - Google® Chrome™ (version 21 or higher)
 - Mozilla® Firefox® (version 15 or higher)
 - Internet Explorer® version 8 or higher (for Windows operating systems)
 - Apple® Safari® version 8 or higher (for Mac OS X operating systems)

Supported formats:

- **File Formats**
 - MPEG2 TS MPEG-2 part 1 (or ISO/IEC 13818-1 or ITU-T Rec. H.222.0)
 - MP4 (including mp4, m4a, m4v file extensions, not case sensitive).
 - TS, m2t, m2ts, 264, and sdp.
 - MOV and FLV (supports only files that use H.264 encoding and AAC audio)
- **Streaming Container Formats**
 - MPEG2 Transport stream (including .ts, .m2ts, .m2t file extensions, not case sensitive)

NOTE: Adaptive bit rate streams are not supported.

The SMD 101 can play video on demand from network shares and local storage supporting the following file types:

Video: mp4, ts, m2t, m2ts, mov*, 264, m4v, flv*, and sdp.

NOTE: *Supports files that use H.264 encoding and AAC audio only.

Images: bmp, jpg, jpeg, tif, tiff, png, and gif.

NOTE: TIFF files using JPEG compression are not supported.

Audio: wav, aac, and m4a.

Playlists: jspf, m3u, m3u8, pls, and xspf.

Features

- **Supports live IP video stream decoding** — Combine with the SME 100 to provide a complete end-to-end streaming solution.
- **Supports streaming resolutions from 480x320 up to 1080p/60** — Supports a wide range of resolutions to meet varying network conditions, topologies, source and display requirements.
- **AV media file playback from network shares** — Use as a playback device for on-demand playback of network-accessible media files.
- **Compatible with MP4 and MPEG-2 Transport Stream container formats** — Playback common H.264 media player formats from accessible network drives.
- **Stereo or dual mono audio output format: Embedded HDMI digital audio or analog stereo audio** — Flexible, cost effective use of display speakers or existing audio systems.
- **Integrated scaler offers selectable output resolutions from 640x480 to 1920x1200** — Wide range of output resolutions ensure that consistent, reliable image quality is presented on many different types of displays.
- **Decode at native resolution** — The output rate and resolution can be configured to automatically follow the native format of the connected display.
- **EDID defined scaling** — The output rate and resolution can be configured for automatic selection based on EDID communication with the connected display.
- **Ethernet to RS-232 pass through control** — Integration friendly Ethernet to RS-232 pass through for display control.
- **Fill/Follow/Fit (zoom) Aspect Ratio Management** — Decoded video can fill a display, maintain aspect ratio, or maintain uniformity, presenting imagery that meets customer expectations.
- **Control from IR remote, wired IR, RS-232, Ethernet, or embedded web interface** — Select from a range of control options to manage the SMD 101 for stand-alone operation or as part of an AV system.
- **Compatible with the full range of SME 100 streaming transport protocols** — Providing the flexibility to apply the most appropriate protocol based on various streaming system requirements and network conditions.
- **Compatible with unicast and multicast push, or pull streaming applications** — Support for push and pull streaming makes the SMD 101 compatible with different network topologies and streaming system configurations.
- **Upload and display image files** — Upload PNG, JPG, TIFF (TIFF with JPEG compression not supported), or BMP image files at resolutions up to 1920x1080 to present familiar imagery or organizational branding, either on demand or in times of network or streaming disruption.
- **On-screen messaging** — On-screen presentation of operating status or channel selection aids in channel selection, system configuration, and troubleshooting.
- **HDMI output** — Compatible with HDMI and DVI digital displays.
- **Automatic negotiation of streaming transport protocols with SME 100** — Makes configuration and operation of Extron H.264 streaming products easy in various streaming and network configurations.
- **Easy-to-use embedded web interface** — Embedded web interface makes configuration and deployment a simple activity.

- **Playback controls including progress bar** — On-screen playback controls present a visual indication of Time and Pause status, allowing for efficient control of content.
- **Compatible with many third party H.264 encoders** — Decode 720p/60 and 1080p/60 streaming video from an Extron SME 100 or other compatible H.264 encoders.
- **Compatible with H.264 Baseline, Main, and High profiles up to and including level 4.2** — Offers the flexibility to efficiently decode and present streaming video at various bit rates and coding complexity.
- **Decoder status reporting** — Simplify configuration and troubleshooting activities with on-screen status reporting to ensure continuous, reliable operation.
- **Front-accessible USB configuration port** — Front-accessible port provides easy access for system configuration and control from a PC.
- **Compact and energy efficient** — Efficient, low power use generates very little heat, making it easy to optimize rack space and maintain lower operating costs.

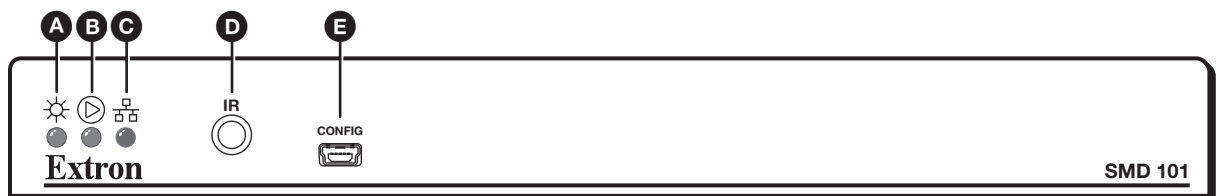
Panels and Cabling

This section provides information on:

- [Front Panel Features](#)
- [Rear Panel Features](#)
- [SMD 101 Power Up Procedure](#)
- [Hardware Setup Overview](#)

Front Panel Features

The front panel of the SMD 101 is shown in figure 2 below.



- A** Power LED
- B** Playback status indicator
- C** Network status indicator
- D** IR receiver window
- E** Config port

Figure 2. SMD 101 Front Panel

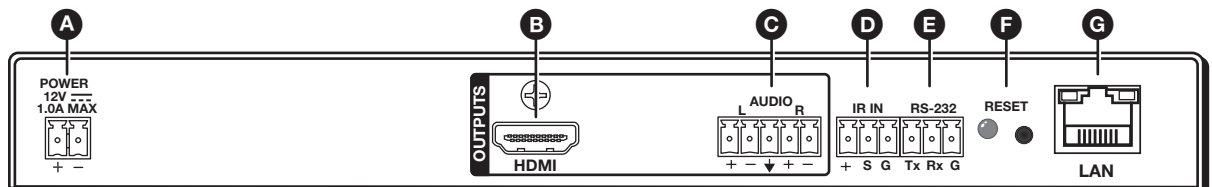
- A Power LED** — Dual color LED lights solid green when the SMD 101 is powered. Lights solid red when standby mode is active.
- B Playback status indicator** — Dual color LED indicates playback operation:
 - **Solid Green** — The SMD 101 is actively decoding a source (clip, image, or stream).
 - **Blinking Green** — A source (clip, image, or stream) is loaded but paused.
 - **Off** — Playback has stopped.
 - **Solid Red** — Unable to load (or play) the selected source.
- C Network status indicator** — Dual-color LED indicates network operation and connection or stream quality:
 - **Solid Green** — Indicates network conditions are favorable for the current source. The LED is also green if the current source is a local file (see [Browser Panel - Files](#) on page 20).
 - **Red/Green** — When flashing red and green, indicates encoder or network conditions could compromise image or audio quality, and buffers could be depleted.
 - **Red** — When lit, indicates degraded server or network conditions are compromising video or audio quality and may have depleted the buffers.
 - **Off** — No network connection.

NOTE: In many cases, the error correction features of the SMD 101 allow good image quality even when degraded network conditions are indicated.

- D IR Receiver Window**— Allows remote operation using an optional compatible IR hand control.
- E Config port** — Connect a control PC or other USB device to this port using a mini-B USB cable (not supplied). Use this port to send Simple Instruction Set (SIS) commands to the SMD 101 for device configuration and control.
 - For information on connecting a control PC or other USB device to this port, see the **Front Panel Configuration Port** section on page 58.
 - For information on SIS commands, see **Remote Communication and Control** on page 57.

Rear Panel Features

The rear panel of the SMD 101 is shown in figure 3 below.



- A** 12 VDC Power connector
- B** HDMI output connector
- C** Analog audio output connector
- D** IR input connector
- E** RS-232 connector (optional)
- F** Reset button and LED
- G** RJ-45 LAN connector

Figure 3. SMD 101 Rear Panel

- A 12 VDC power input** — Connect the provided 12 VDC power supply to the rear panel captive screw connectors. When power is connected, the front panel power indicator lights green (see **figure 2, A** on page 8).

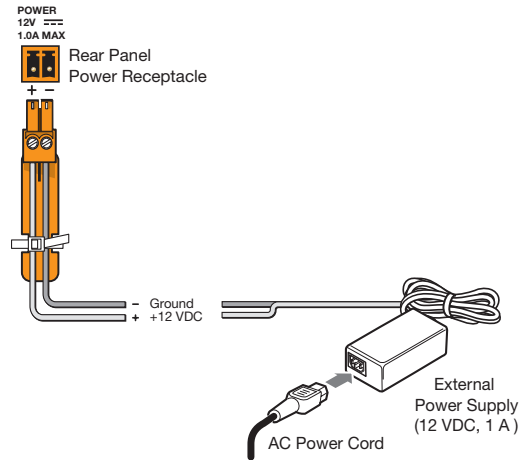


Figure 4. Power Supply Connection

ATTENTION:

- Always use a power supply provided by or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the end product.
- Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities. The power supply is to be located within the same vicinity as the Extron AV processing equipment in an ordinary location, Pollution Degree 2, secured to the equipment rack within the dedicated closet, podium, or desk.
- The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 725 and the Canadian Electrical Code part 1, section 16. The power supply shall not be permanently fixed to building structure or similar structure.

- B HDMI output connector** — One female HDMI to connect a display or other HDMI output device.
- C Audio output connector** — Connect audio output devices using cables with balanced or unbalanced 3.5 mm, 5-pole captive screw connectors. See figure 5 below to wire the connectors.

ATTENTION: For unbalanced audio, connect the sleeves to the ground contact. **DO NOT** connect the sleeves to the negative (–) contacts.

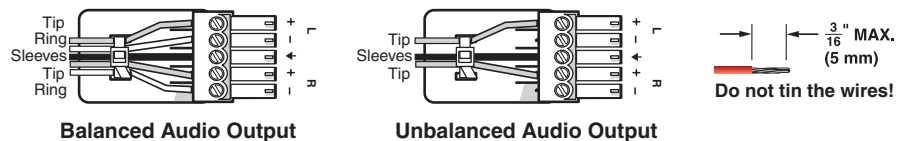


Figure 5. Audio Output Captive Screw Connector Wiring

- D IR IN** — Connect a remote IR receiver to this 3-pole 3.5 mm captive screw connector to extend the range of the hand control.



Figure 6. IR In Wiring

- E RS-232 connector (optional)** — Connect a host computer or control system to the RS-232 connector or to the local device if pass-through mode is used. Use this port to send SIS commands to the SMD 101 for device configuration and control. The default protocol for this port is 9600 baud rate, no parity bit, 8 data bits, 1 stop bit, and no flow control (handshaking).
 - For information on SIS commands, see [Remote Communication and Control](#) on page 57.
 - See figure 7 below, to wire the RS-232 connector.

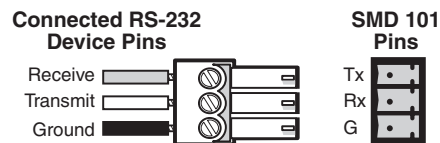


Figure 7. RS-232 Connector Wiring

- F Reset button and LED** — The reset button is used to return the SMD 101 to partial or complete factory condition. The reset LED provides the status of the reset. The SMD 101 has three reset modes (see [SMD 101 Rear Panel Reset](#) on the following page).
- G RJ-45 LAN connector** — Connect one end of an RJ-45 cable to the LAN (Ethernet) connector on the SMD 101 (see figure 8). Connect the other end of the RJ-45 cable to a router or switch to connect the SMD 101 to a network.

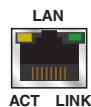


Figure 8. RJ-45 Ethernet Connector

The LEDs on the Ethernet connector indicate the status of the network connection.

- Link LED** — This green LED lights when the SMD 101 is properly connected to an active network.
- Act LED** — This amber LED blinks in a pattern to indicate the connected network speed as follows:
 - Three blinks — 1 Gbps
 - Two blinks — 100 Mbps
 - One blink — 10 Mbps

SMD 101 Rear Panel Reset

The Reset button on the rear panel of the SMD 101 (see [Figure 3](#) on page 9) returns the SMD 101 to various modes of operation.

To select different reset modes, use a pointed stylus or small screwdriver to press and hold the Reset button while the SMD 101 is powered, or press and hold the Reset button while applying power to the SMD 101.

ATTENTION: Review the reset modes carefully. Some reset modes delete all user loaded content and revert the device to default configuration. The [SMD 101 Reset Summary](#) on page 83 provides a summary of the reset modes and the configuration settings affected by each mode.

NOTES:

- The reset modes close all open IP and Telnet connections and all sockets.
- Each reset mode is a separate reset (not a continuation from mode 1 to mode 5).
- Reset modes 2 and 3 are not available for the SMD 101.
- The SMD 101 can also be reset using the web-based user interface (see [Reset Device](#) on page 42).
- For information on resetting the SMD 101 using SIS commands, see [Resets](#) on page 68 of the [Command and Response Tables](#) section.
- Further details comparing the reset modes and affected configuration settings and user content are in the reference section (see [SMD 101 Reset Summary](#) on page 83).

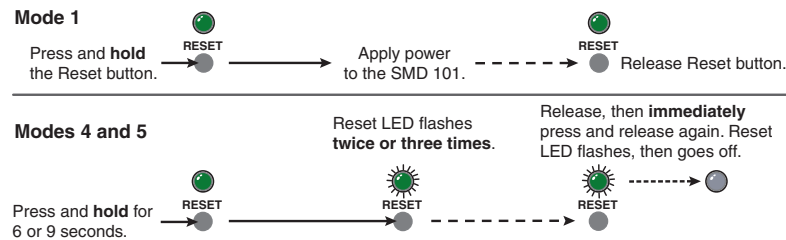


Figure 9. Resetting the SMD 101

SMD 101 Power Up Procedure

NOTE: Before powering on the SMD 101, ensure that all necessary devices are connected properly. Devices do not need to be powered.

Connect the external power supply to a 100 to 240 VAC supply (see [Rear Panel Features](#) on page 9). The DC power LED lights and the SMD 101 undergoes a self testing sequence. When connected to a network, the front panel network LED indicator lights green when the SMD 101 is ready to decode.

Hardware Setup Overview

NOTE: If it is difficult to access the device after installation, configure the network settings of the SMD 101 prior to starting (see [Accessing the Web-based User Interface](#) on page 14, and [Connection](#) on page 34).

1. If the SMD 101 has been on for configuration, turn it off and disconnect the SMD 101 and all connected devices.
2. Mount the SMD 101 (see [Mounting the SMD 101](#) on page 81).
3. Connect one end of an RJ-45 cable to the rear panel LAN connector on the SMD 101 (see [Rear Panel Features](#) on page 9). Connect the other end of the RJ-45 cable to the local network.
4. Connect a compatible output device to the rear panel (see [Rear Panel Features](#) on page 9) and power it on.
5. Connect a control device to the SMD 101 by one of the following connections:
 - a. The front panel config port (see [Front Panel Configuration Port](#) on page 58).
 - b. The rear panel RS-232 port (see [RS-232 Port](#) on page 57).
 - c. The Ethernet connection. Configure the network settings of the control PC so it is compatible with the network the SMD 101 is connected to (see [LAN \(Ethernet\) Port](#) on page 59).
6. Connect the external power supply output connector to the SMD 101 (see [Rear Panel Features](#) on page 9), then connect the power supply to a 100 to 240 VAC, 50 Hz or 60 Hz power source. The SMD 101 powers up automatically and undergoes a self testing sequence (see the [SMD 101 Power Up Procedure](#), above).
7. From the control PC, access the user interface of the SMD 101 (see [Accessing the Web-based User Interface](#) on page 14).
8. Select a stream to decode (see [Player Page](#) on page 16).
9. If necessary, set the decoder output for the connected display (see [Video Output](#) on page 3 and [Video Configuration](#) on page 28).
10. Press **Play** on the software interface (see [Player Page](#) on page 16) or on the optional remote control (see [IR Remote Control](#) on page 56) to begin decoding the selected stream.

Web-based User Interface

This section provides information about:

- [Overview of the Web-based User Interface](#)
- [Accessing the Web-based User Interface](#)
- [Page Overview](#)
- [Player Page](#)
- [Configuration Page](#)
- [Advanced Configuration Page](#)
- [Device Information Page](#)
- [Status Page](#)
- [Browser Idle](#)

Overview of the Web-based User Interface

The web-based user interface, accessed from a control device, can configure, remotely control, monitor, update firmware, and operate the SMD 101.

NOTE: Google Chrome was used to take the SMD 101 user interface screen shots in this user guide and is the recommended browser. Pages and panels viewed in other browsers may not appear exactly the same.

Accessing the Web-based User Interface

To access the web-based user interface, connect a control PC or viewing device to the SMD 101 and open a compatible web browser. Enter the IP address of the SMD 101 (default IP address is 192.168.254.254) into the browser address bar.

There are five pages with related controls grouped together on each page:

- **Player** — used to select the source (stream) and control decoding.
- **Configuration** — provides basic user level adjustments.
- **Advanced Configuration** — for initial setup and administrator use.
- **Device Information** — provides default setting and user defined information.
- **Status** — Real-time display of operating conditions and statistics.

Access pages by selecting the tab across the top of the dialog box.

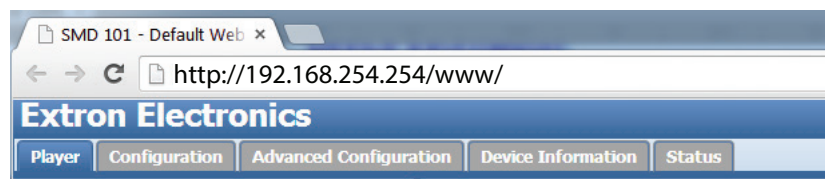


Figure 10. Web-based User Interface, Page Tabs
Browser Idle

To conserve the host PC resources, after 60 minutes, the browser accessing the SMD 101 web interface stops requesting status and video confidence updates.

This feature does not idle or affect SMD 101 operation. It suspends the automatic browser updates for the video confidence display to conserve network and PC resources. Press **Resume** to force the browser to reconnect to the SMD 101 and begin normal updates.

Page Overview

The web interface opens as shown in figure 11 (below). The page contains multiple panels that are collapsed and expanded using the buttons at the top of each panel (see figure 11, ① and ②).

An interactive embedded help file is always available by clicking the help icon (see figure 11, ③) from any page or panel.

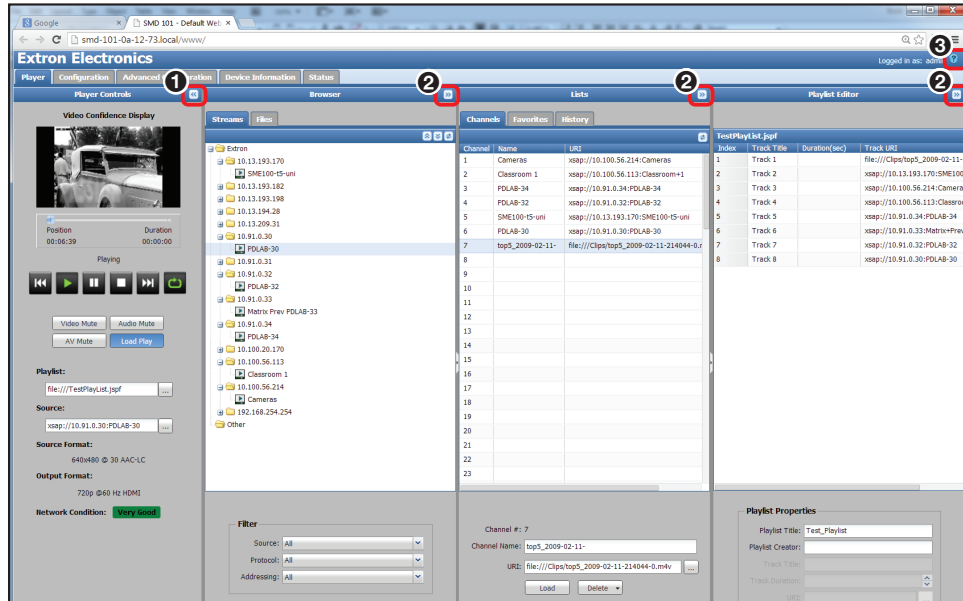


Figure 11. Player Page - All Panels Open

The **Browser**, **Lists**, and **Playlist Editor** panels can be collapsed or resized horizontally to provide additional space for other page information and details. The **Player Controls** panel can only be collapsed or expanded. Its size, when open, is fixed.

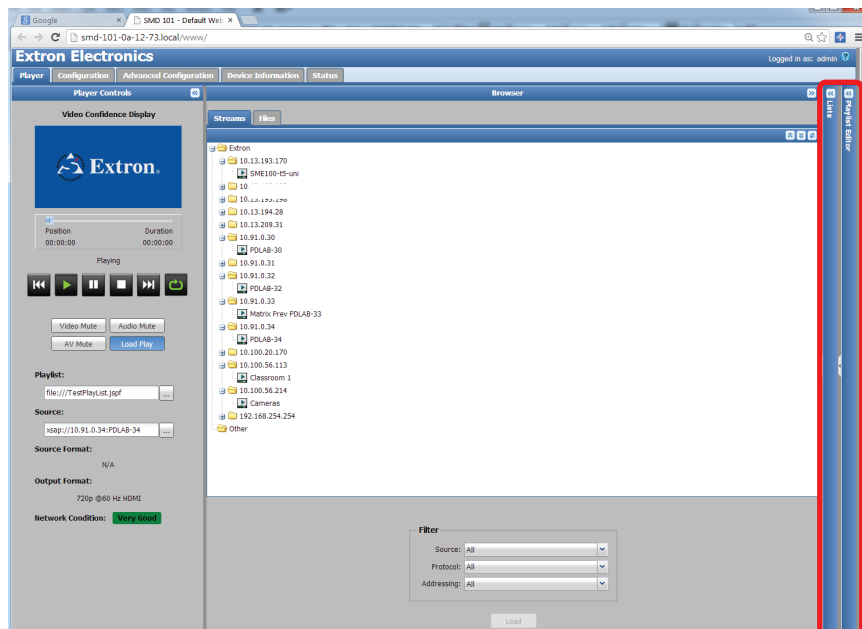


Figure 12. Player Page - Browser and Playlist Editor Collapsed

In figure 12, the **Lists**, and **Playlist Editor** panels are collapsed. The **Player Controls** panel remains the same size while the **Browser** panel expands to fill the screen space previously occupied by the **Lists** and **Playlist Editor** panels.

Player Page

Click the **Player** tab (see figure 13). This page has four panels; **Player Controls**, **Browser**, **Lists**, and **Playlist Editor** described in the following sections. Each panel expands or collapses to provide additional screen space and can have second level tabs.

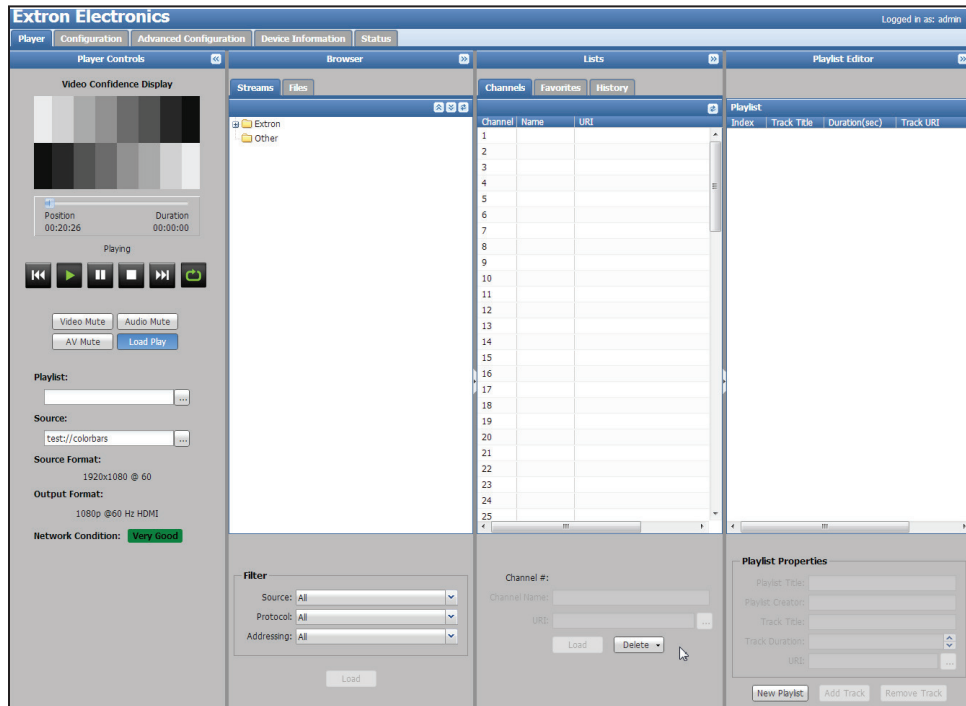


Figure 13. Player Controls Page

Player Controls

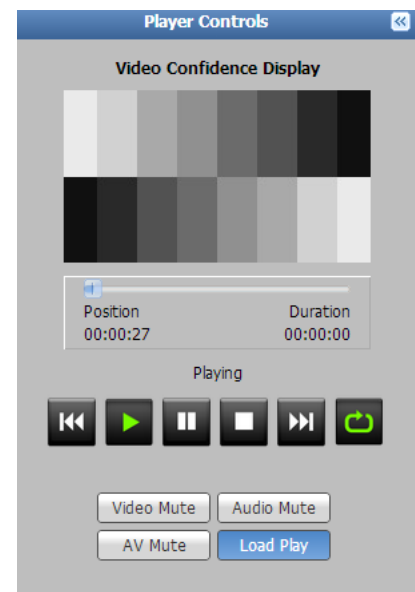
The **Player Controls** panel allows the user to select a source (clip, stream, or playlist), monitor the playback video, and control playback.

The **Player** page opens with the **Player Controls** panel expanded. Changes made to the layout of the player page are retained during the current session. For instance, if a user switches to the **Status** page then back to the **Player** page, the same view is maintained.

The **Player Controls** panel includes the following features:

Video Confidence Display — The display shows a series of monochrome snapshots corresponding to the real-time output, updated every 2 seconds.

Progress Bar — Shows the position in time of the currently playing clip. The current playback position is on the left, and the total duration of the clip (if known) on the right.



Status indicator and Player Controls — Text above the controls (figure 14, ❶) indicates the current decode state (stopped, paused, or playing).

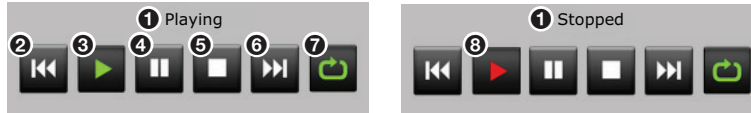


Figure 14. Player Control Buttons

The controls are:

- ❷ **Return** — If pressed within five seconds after the clip begins, returns to the previous clip or stream and plays. If pressed after five seconds, returns to the beginning of the clip or stream and plays.
- ❸ **Play** — Begin normal playback.
- ❹ **Pause** — Pause playback.
- ❺ **Stop** — Stop playback.
- ❻ **Advance** — Go to the next clip or stream and play.
- ❼ **Loop** — Set the clip or stream to continuous play.
- ❽ **Error** — The selected source cannot be played.

Mute controls

Allows the user to mute video only, audio only, or both. The indicator lights red when mute is active. Pressing again unmutes the selection and the indicator goes out.

Load Play

Load play sets the response of the player when a source (stream, clip, or playlist) is loaded. When enabled, the **Load Play** indicator is blue (shown enabled, below). As soon as a source is loaded, the player immediately begins playback. When disabled (gray), the player waits for user input before beginning playback of a loaded clip or stream. Press **Load Play** to toggle the feature on or off.

NOTE: When a stream is loaded from the channel list (see [Lists](#) on page 22) using drag and drop in the player controls panel, or via remote access features such as Ethernet, RS-232, wired IR, and the IR remote control handset, the stream or clip plays immediately regardless of the **Load Play** configuration.

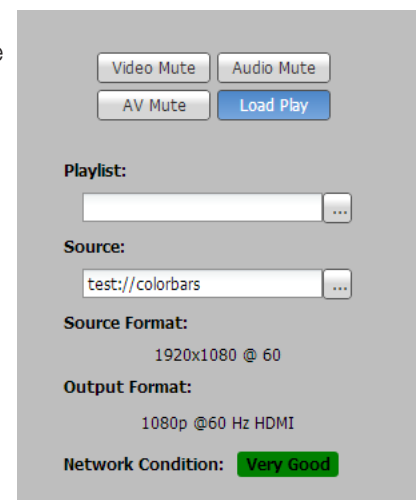
Playlist field

When a playlist is loaded, this field displays the path and file name of the playlist. The full file and path name may be abbreviated to fit the space available. The ellipsis button (...) to the right of the text field opens a dialog to display paths and file names too long for the field to display completely or to edit the names. Playlist path and file names can be copied to or from this field.

To load a playlist:

- **Click** and **hold**, then **drag** a playlist from the browser window to this field.
- Right-click the playlist and select **Load**.
- Paste a playlist path and filename into this field from the clipboard using <Ctl+C> and <Ctl+V>.
- Select a playlist file from the file tab of the file browser panel (see [Browser](#) on page 18).

When the playlist is selected, click **Load** at the bottom of the panel to bring it into the playlist field.



Source field

When a source (clip or stream) loads, this field displays the path and file name. Click (...) to the right of the text field to open a dialog displaying paths and file names too long for the field.

A source can be loaded by any of these methods:

- **Click and hold**, then **drag** a source from the browser to this field.
- Use <Ctl+C> to copy, then <Ctl+V> to paste a URI or URL directly into the field. If required, edit the name, then press <Enter> or click outside the field to confirm and load the source.
- Select a source in the **Browser>Files** panel and click **Load** in the bottom panel.
- <Right-click> a source in the **Browser>Files** panel, and select **Load**.

Source format

Displays the format (DVI or HDMI), resolution, frame rate, and audio codec of the current clip or stream.

Output format

Displays the current format (video resolution, frame rate, and audio format) of the output.

Network Condition

Displays a simple indication of current network conditions relative to the selected stream (corresponds to the front panel network indicator). The network conditions are defined as:

- **Very Good** (green) — Network conditions allow full image and sound quality.
- **Reduced** (amber) — Network conditions such as packet loss, jitter, or delay are likely to cause intermittent and noticeable degradation of image or sound quality.
- **Poor** (red) — Network conditions are likely to cause frequent and sustained degradation or loss of audio and video.
- **Very Bad** (black) — Communication with the source is lost. The server could be disconnected from the network.

NOTE: In many cases, the error correction features of the SMD 101 allow good image quality even when degraded network conditions are indicated.

Browser

By default, the player page opens with the streams tab selected (see figure 15). Collapse it to make more room for the lists or playlist editor panels. Tabs divide available source content into **Files** and **Streams**.

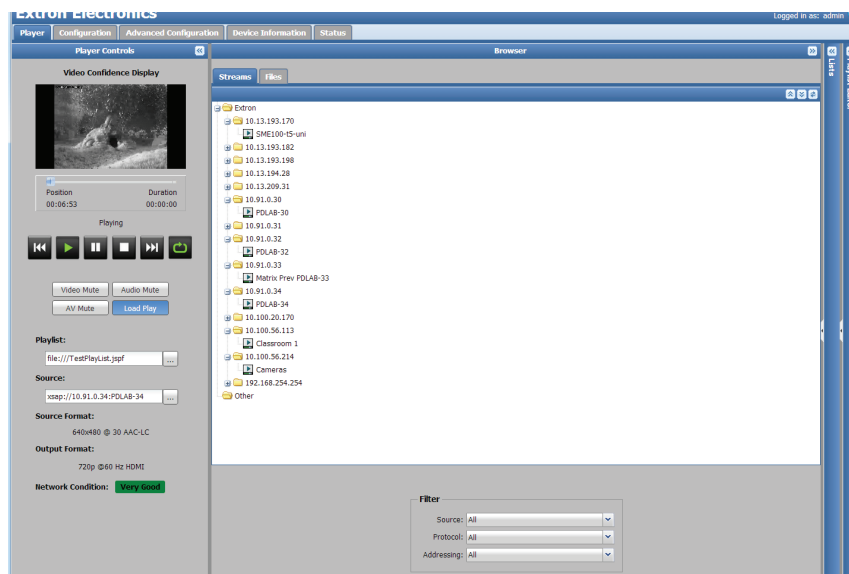


Figure 15. Browser Panel, Streams Tab

Browser Panel - Streams

The **Streams** tab in the **Browser** panel displays a list of streams identified on the local subnet the SMD 101 is connected to.

NOTE: The compatibility of streams listed in the browser is not assured. Stream compatibility is verified by the SMD 101 only as it is loaded for play.

The streams list is generated using information from Session Announcement Protocol (SAP) messages broadcast on the local subnet.

Streams are grouped into folders according to information within the SAP message. Standard panel controls expand, collapse, or refresh the list. In addition, click the corresponding folder icon to expand or collapse individual folders.

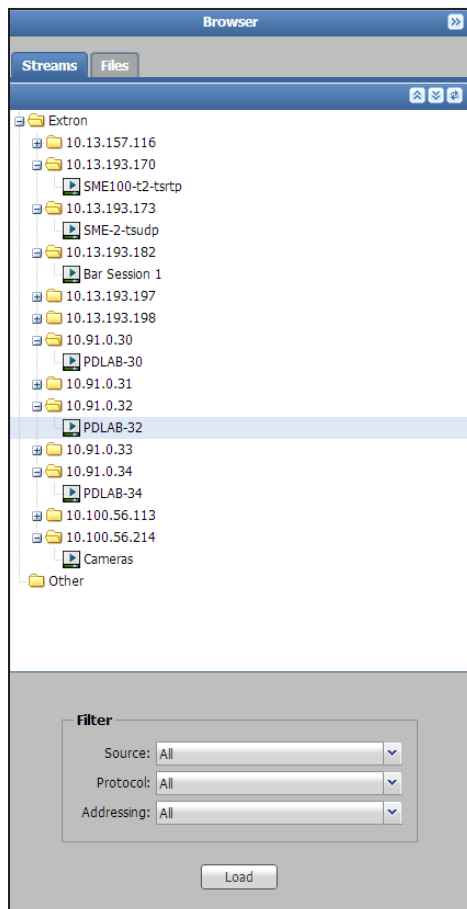


Figure 16. Browser Panel, Streams

The default view showing the top folders expanded and sub-folders collapsed is restored each time the web page opens. The folders are sorted by IP address.

To load a stream:

- Click and hold the desired stream, then drag it to the **Player Controls** panel.
- Click the stream to highlight it, then click **Load** (below the **Filter** panel).
- Right-click on the stream, then select **Load** from the right-click menu.

Filter

Filters are provided to refine the list of streams viewed in the browser. There are three filters with sub-filters to narrow the list of streams. The default choice for each filter is **All**.

- **Source** — Limits the browser to streams identified by their source device or location. The drop-down list is populated with SAP source identification data. Limiting choices are **Extron** or **Other**.

NOTE: A stream listed under Extron is defined as a member of the Extron group by the SAP/SDP message. If the SAP/SDP message does not indicate Extron group membership, it is listed in Other.

- **Protocol** — Limits the browser to streams identified by their transport protocol (UDP or RTP). The list is dynamic, populated from SAP transport protocol data as the streams are identified.
- **Addressing** — Limits the browser list to streams identified as unicast or as multicast.

NOTE: Unicast streams can only be played if the connection (destination) address is set correctly at the decoder.

Load

Loads the selected stream for playing.

Browser Panel - Files

The **Files** tab opens a list of available clips and playlists in the file system including internal storage (up to 175 MB for user content) and shared network folders (when mounted). Each file type (audio, image, video, system, and playlist) has a different icon to distinguish it.

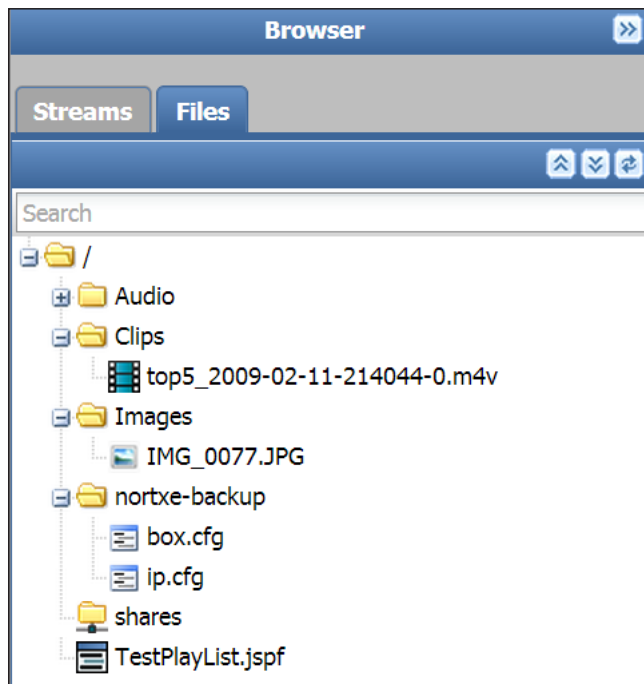


Figure 17. Browser Panel, Files

Separate controls fully expand, fully collapse, or refresh the list. In addition, click the corresponding individual folder icons to expand or collapse.

In a current session, the folder view is retained after the user collapses the browser, changes tabs within the browser, or changes the page (for example, from **Player** to **Configuration**). The default view (top folders expanded and all sub-folders collapsed) is restored each time the web interface is opened or refreshed.

NOTE: Right-click on file browser items for additional actions. When renaming files or folders, the web interface enforces SIS file name and path requirements. Spaces are not allowed. When creating folders or uploading files using a SFTP client, spaces are allowed and fully supported.

A clip or playlist is loaded for playback by dragging the selected item from the browser and dropping it inside the **Player Controls** panel.

Filter

The drop-down filter limits the browser files display to any combination of the following file types:

- **Clips** — compatible video files.
- **Playlists** — compatible playlist files created by the user.
- **Images** — compatible image files.
- **Audio Only** — compatible audio files.

NOTE: The quantity, size, and contents of shared folders on the network are initially unknown. In order to maximize performance, the filter is applied only to one level below the currently expanded folders. When a user expands a folder, it is then indexed and filtered.

Load

Loads the currently selected file (audio, clip, image, or playlist) to the player.

Network Shares

Click **Network Shares** to open the network shares dialog. This allows connection to a network directory or drive for access to compatible files (see figure 18).

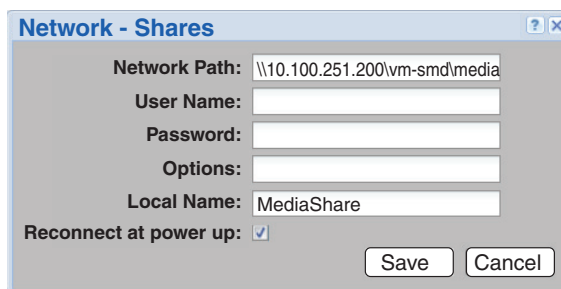


Figure 18. Network Shares Dialog

See [Play Video on Demand](#) on page 51 for information on adding and using network shares.

Lists

The **Lists** panel features an editable channel list for use with the optional IR remote control (see **IR Remote Control** on page 56), a drag and drop favorites list for convenient access of frequently played files, and the playback history. By default the player page opens with the **Lists** panel expanded to the right of the browser.

NOTE: M3U, M3U8, and PLS playlist formats do not support **Playlist Title** or **Playlist Creator** metadata. Text entered in those fields is not retained. If that information is required for your application, use .jspf or .xspf playlist format.

The **Lists** panel has three tabs: **Channels**, **Favorites** and **History** (see figure 19).

Lists Panel – Channels tab

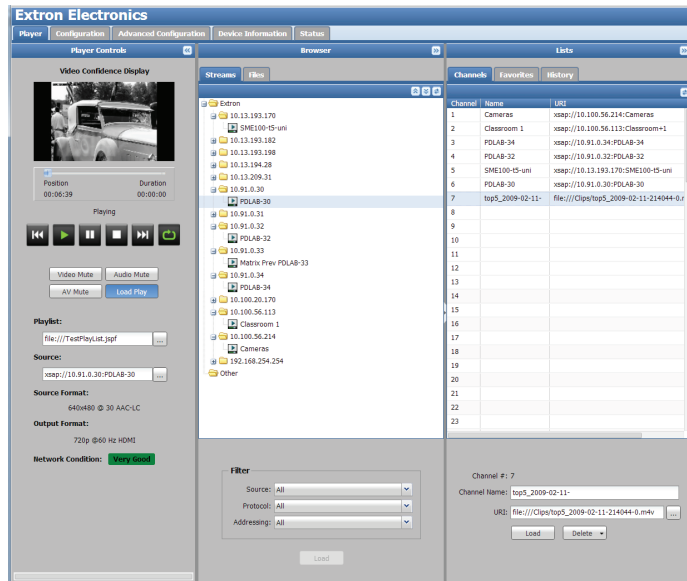


Figure 19. Lists Panel, Channels Tab

The **Channels** tab displays a list of current populated channels. Up to 99 channels are individually defined by associating a stream, a file, or a playlist with a channel number and (optionally) defining a logical name for the channel.

Fields below the channel list show the currently selected channel number, channel name, and channel Universal Resource Identifier (URI). To assign a stream, file, or playlist to a channel, select and drag an item from the browser **Files** or **Streams** panel to the desired channel number. The channel name and URI are edited directly or new information is pasted from the clipboard of the host computer. The ellipses to the right opens a dialog box to read or modify longer paths or filenames.

To play a channel, select and drag an item from the **Channels** panel to the **Player Controls** panel or select a channel and click **Load**. To mirror typical IR remote control operation, the channel begins playing immediately regardless of the **Load Play** setting (see **Load Play** on page 17).

NOTE: Standard Windows keyboard shortcuts can be used to copy <CTL+C> and paste <CTL+V> the stream, file, or playlist to a channel number, or to copy a channel to the player.

The optional handheld IR remote control accesses this channel list to provide wireless program selection (see **IR Remote Control** on page 56).

To clear an item, select the item, then click **Delete>Delete Selected**. To clear all items, click **Delete>Delete All**.

NOTE: Channel, Favorite and History lists are imported or exported using the **Configuration** panel found on the **Firmware Loader** page of the **Advanced Configuration** page.

Lists Panel – Favorites

The **Favorites** tab displays a list of user defined favorite clips (see figure 20). Favorites are clips, streams, or playlists more frequently played by the user. The favorites list is defined by dragging a file or stream to the tab. The file location does not change. The favorites list provides quick and easy access to more commonly used files and clips.

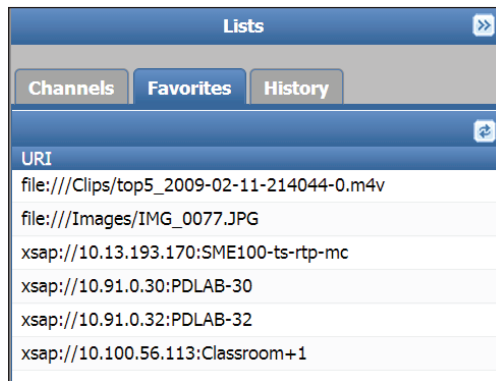


Figure 20. Lists Panel, Favorites Tab

Fields are available below the channel list to show the currently selected folder, favorites name, and favorites URI. The folder name, favorites name, and URI can be edited or new information pasted from the clipboard of the host machine. The ellipses (. . .) to the right of the editable fields open a dialog box to allow longer paths or filenames to be read or modified.

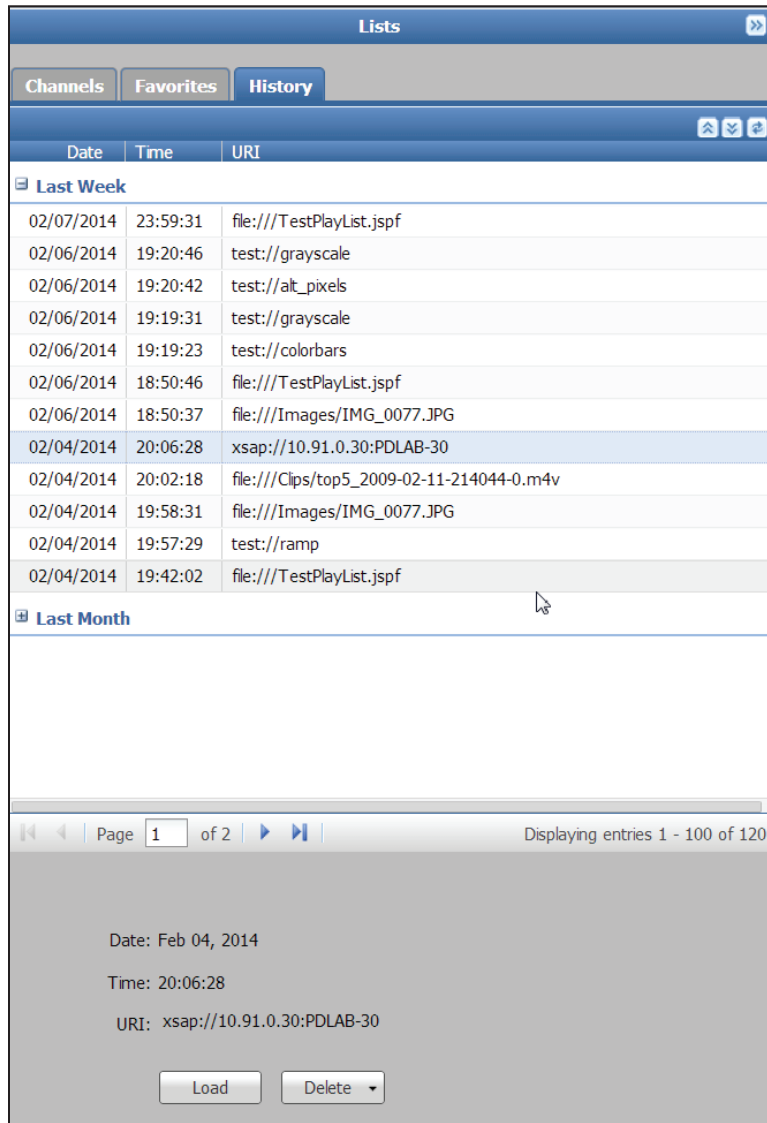
To load a favorite:

- Drag the selected item from the **Favorites** panel to inside the **Player Controls** panel,
- Select an item and press **Load**.

To delete a favorite, select the favorite, then press **Delete** to clear.

Lists Panel – History

The **History** tab displays a list of previously played clips, playlists, or streams with details of the data and time the item played and the URI of the item, grouped by time period.



The screenshot shows the 'Lists' panel with the 'History' tab selected. The panel has three tabs: 'Channels', 'Favorites', and 'History'. Below the tabs is a table with columns 'Date', 'Time', and 'URI'. The table is grouped into two sections: 'Last Week' and 'Last Month'. The 'Last Week' section contains 12 rows of data. The row with Date '02/04/2014', Time '20:06:28', and URI 'xsap://10.91.0.30:PDLAB-30' is highlighted in blue. The 'Last Month' section is currently empty. Below the table is a pagination bar showing 'Page 1 of 2' and 'Displaying entries 1 - 100 of 120'. At the bottom, there is a detailed view of the selected item with fields for 'Date: Feb 04, 2014', 'Time: 20:06:28', and 'URI: xsap://10.91.0.30:PDLAB-30'. Below these fields are two buttons: 'Load' and 'Delete'.

Date	Time	URI
Last Week		
02/07/2014	23:59:31	file:///TestPlayList.jspf
02/06/2014	19:20:46	test://grayscale
02/06/2014	19:20:42	test://alt_pixels
02/06/2014	19:19:31	test://grayscale
02/06/2014	19:19:23	test://colorbars
02/06/2014	18:50:46	file:///TestPlayList.jspf
02/06/2014	18:50:37	file:///Images/IMG_0077.JPG
02/04/2014	20:06:28	xsap://10.91.0.30:PDLAB-30
02/04/2014	20:02:18	file:///Clips/top5_2009-02-11-214044-0.m4v
02/04/2014	19:58:31	file:///Images/IMG_0077.JPG
02/04/2014	19:57:29	test://ramp
02/04/2014	19:42:02	file:///TestPlayList.jspf
Last Month		

Page 1 of 2 | Displaying entries 1 - 100 of 120

Date: Feb 04, 2014
Time: 20:06:28
URI: xsap://10.91.0.30:PDLAB-30

Load Delete

Figure 21. Lists Panel, History Tab

Fields below the history list show the date and time of the selected item along with the URI. The URI can be copied or edited to create a new URI, which can be loaded and played (the original entry remains unchanged).

A history item can be played by selecting and dragging the history item from the **History** tab to the **Player Controls** panel, or select an item and click **Load**.

To clear history information, select the item or range of items, and click **Delete>Delete Selected**. To clear the entire history, click **Delete>Delete All**.

The files are not deleted, only the history entry.

Playlist Editor

By default, the **Player** page opens with the **Playlist Editor** open (see figure 22).

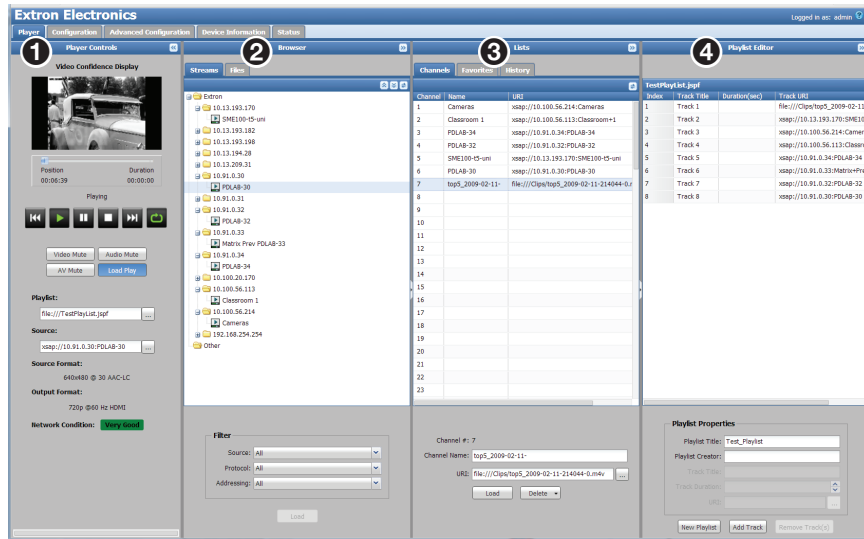


Figure 22. Player Page, Playlist Editor

Playlists are stored in local media and are found using the files tab of the browser. Select a playlist on the **Files** tab of the **Browser** panel (see figure 22, 2). The playlist opens in the **Playlist Editor** panel for viewing or editing. The name of the currently selected playlist is on the title bar at the top of the **Playlist Editor** panel (4).

The sequence of the clips in the playlist determines the sequence the clips are played. Clips can be reordered within the playlist using drag and drop.

NOTE: Multiple clips can be selected using the standard <shift> or <control> key combination shortcuts.

To create a new playlist, select the target folder in the stream browser panel and press **New Playlist** on the **Playlist** panel.

The playlist path can be changed at any time, but it is more convenient to make a folder selection first. The playlist name (filename) is required. Title and author are optional.

Playlist Properties

The **Playlist Properties** panel can create a new playlist, add a new clip, stream, or image (**Add Track**), remove a track (**Remove Track**), or shorten the playing time of a selected track in the playlist.

To create a new playlist:

1. Select **Browser>Files**.
2. In the Playlist Editor, click **New Playlist** to create an empty playlist. New playlists are always created in the current folder of the **Browser>Files** panel by default, but can be changed by the user as noted above.
3. To add files and clips to the playlist, drag and drop them from the browser to the playlist editor or enter the filepath directly into the URI field of the **Playlist Properties** panel.

The playlist title, creator, track title, track duration, and URI of a currently selected clip in the playlist are shown in the **Playlist Properties** panel. If an attempt is made to add an unsupported clip, an error message (“**unsupported file format**”) is presented.

NOTE: Playlist level metadata is not supported in M3U, M3U8, and PLS format playlists.

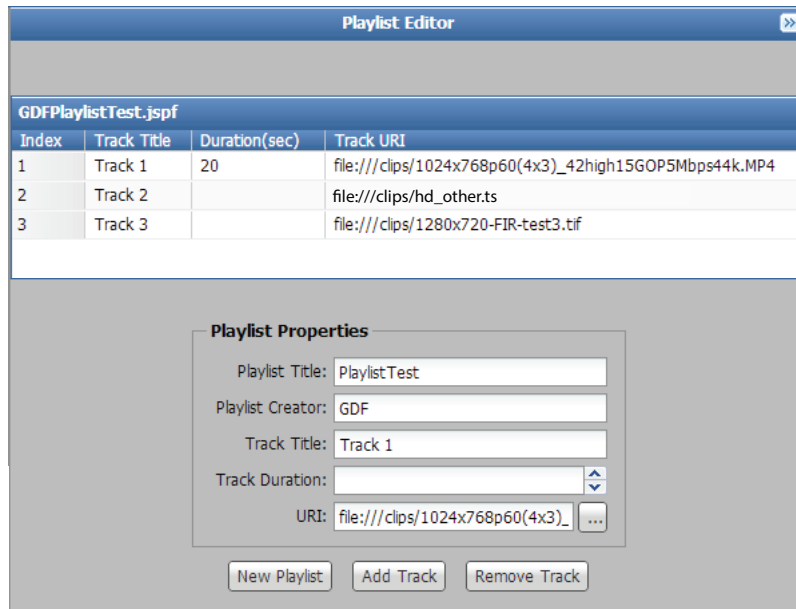


Figure 23. Playlist - Clip Properties

Once files and clips are added to the playlist, the clip properties are in the playlist editor and the **Playlist Properties** panel below the editor. The track title and duration can be changed using either.

To change the track title:

- Double-click in the **Track Title** column of the selected track in the playlist editor and enter the new title, or
- Double-click in the **Track Title** field of the **Playlist Properties** panel and enter the new title.

To shorten the playing duration of a clip either:

- Double-click in the **Duration** column of the selected track in the playlist editor and enter the desired duration time in seconds.
- Double-click in the **Track Duration** field of the **Playlist Properties** panel and enter the desired clip length in seconds.
- Use the up and down arrows in the **Track Duration** field of the **Playlist Properties** panel to scroll to the desired clip length in seconds.

The track duration, the length of time a clip plays during the playlist, can be shortened or lengthened without changing the original clip. Although a duration can be set beyond the clips original playing time, the transition to the next clip occurs when the clip completes.

NOTES:

- Clips in the playlist that are in network shares and local storage have known durations. Streams in the playlist whether in local storage, network shares, or are streamed live typically have an unknown duration.
- When playlists are assembled offline, it is possible to introduce incompatible, damaged, or missing clips into a playlist without warning. The player always attempts to play the entire playlist. Incompatible, damaged, or missing clips are skipped.

When a playlist is edited, changes are saved immediately. If the playlist is active, the changes are indicated by an asterisk following the playlist name until the playlist is reloaded.

Select a clip or clips and click **Remove** to remove individual or multiple clips from the current playlist. When removing one or more clips, the user is presented a warning message (“**Press enter to remove the selected clips**”) with an option to confirm or cancel the operation. When multiple clips are removed it is not necessary for them to be part of a contiguous range.

Configuration Page

The **Configuration** tab provides controls on the global navigation bar to adjust basic features of the SMD 101. The controls are in four groups; **Video**, **Audio**, **On Screen Display**, and **Automation** accessed from a ribbon toolbar across the top of the screen (see figure 24).

Video Configuration

Select **Video** to open the **Video Configuration** page (see figure 24). The page allows test pattern selection for troubleshooting or setup of connected displays, selecting the HDMI output mode, and configuration of the stream buffering.

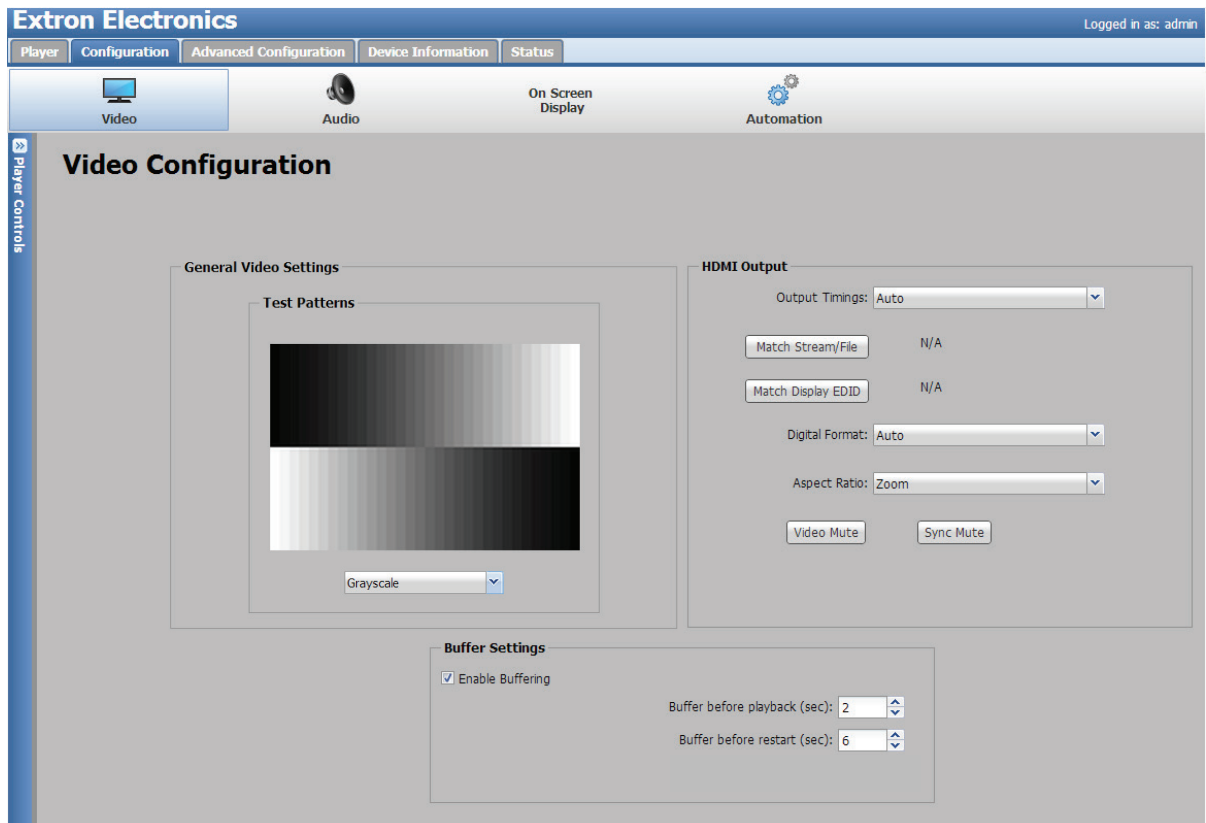


Figure 24. Configuration - Video Configuration Page

General Video Settings Panel

This panel allows selection of a test pattern. The confidence display shows a thumbnail of the playing pattern (see figure 24).

Click the drop-down list under the test pattern confidence display and select a pattern from the following:

- Alternating Pixels
- Alternating lines
- Crosshatch
- Crosshatch 4x4
- Color bars
- Grayscale
- Ramp
- White field

Click the drop-down list again and select **off** to stop playing the test pattern.

NOTE: When a test pattern is selected, source streaming stops and the test pattern is switched to the output. If the output format is changed, the test pattern is also stopped while the output reformats. You must then restart the test pattern from the player controls (press **Play**) or select another test pattern.

HDMI Output panel

Select an output resolution and rate from a list of output timings. When the source (stream or file) resolution or rate differs from the selected output, scaling and frame rate conversion are applied. In addition, you can choose to match the output resolution to the timings of the current stream or file (provided those timings are supported by the SMD 101 and the connected display) or to match the output with optimum timings for the display.

Output Timings — Click the drop-down list and select the desired format (see [Output Resolution and EDID Support Table](#) on page 4).

Match Stream/File — Automatically selects an output format based on the input stream.

Match Display EDID — Selects an output format based on the best match of the input stream format and available display formats provided by the EDID of the display.

Digital Format — Sets the digital output format from these selections:

- Auto (default)
- DVI RGB 444 (digital embedded audio is disabled)
- HDMI RGB 444
- HDMI YUV 444
- HDMI YUV 422

NOTE: HDMI video level range is set automatically according to defined standards (0-255 for RGB and 16-235 for YUV (YPrPb)).

Aspect Ratio — Sets the output aspect ratio.

- **Fill** — Scales the source to fill the display area. If the aspect ratios differ, the source aspect ratio is not maintained.
- **Follow (default)** — Does not scale the source. If the aspect ratios differ, the source aspect ratio is maintained using black bars to fill areas where the source video does not fit the display screen.
- **Zoom** — Maintains the source aspect ratio, but crops excess video to fit the screen.

Video Mute — Mutes only the active video.

Sync Mute — Mutes both video and sync allowing a connected display to go into power save mode (if equipped).

NOTE: The current playback stops when changing the output timings, digital format, or aspect ratio as the output adjusts. Press **Play** to restart the selected clip or test pattern.

Buffer Settings panel

The stream buffer runs the stream into internal memory, delaying output video until the buffer fills. This prevents normal network events from disrupting video output.

Buffer settings are configured to optimize the way stream data is handled for specific applications. Where low latency (minimum delay) is required, reduce the **Buffer before playback (sec)**: time or disable buffering by unchecking **Enable Buffering**. Where network performance is limited, increase the buffer times to ensure sufficient data is available to prevent freeze or dropouts.

Enable Buffering — Place a checkmark in this box to turn buffering on. To turn buffering off, click the checkbox again to clear the checkmark.

Buffer before playback (sec): — Sets the time in seconds the stream is buffered before video output begins. Choose a time from 0.01 to 30 seconds. Default is **2.0** seconds.

Buffer before restart (sec): — Sets the time in seconds the video output is delayed after a restart. Range is 0.01 to 30 seconds. Default is **6.0** seconds.

Audio Configuration

The **Audio Configuration** page (see figure 25) provides information and control of the analog audio output. The controls do not affect embedded audio on the HDMI output. Analog audio can be delayed or muted. A master gain control for the selected audio is provided.

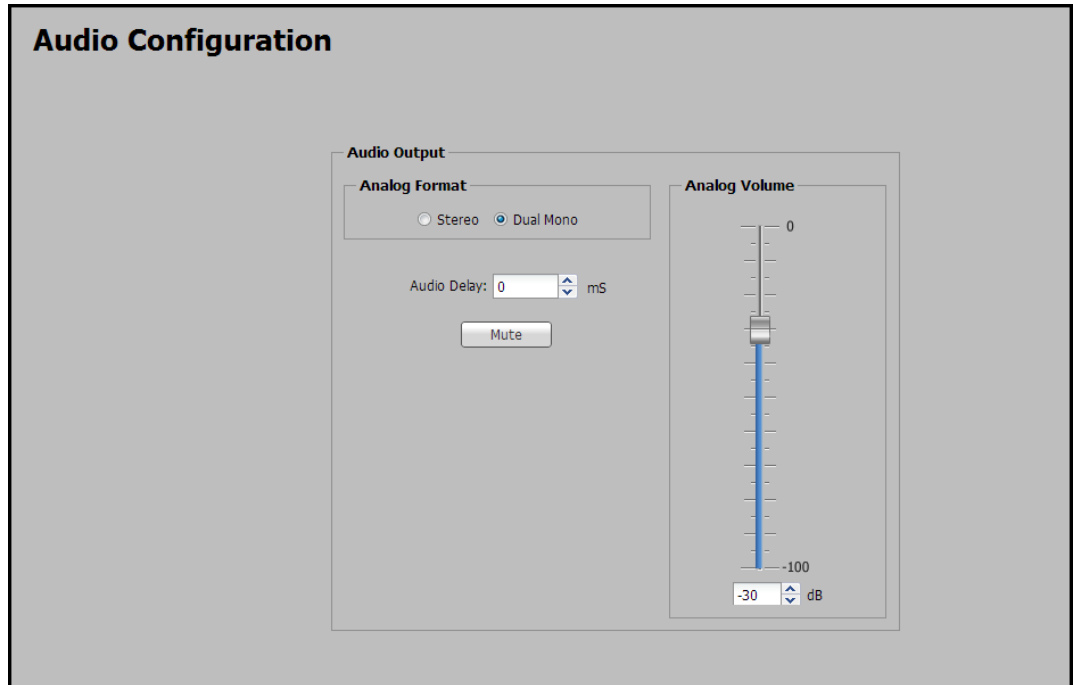


Figure 25. Configuration - Audio Controls

The analog audio output format is displayed in the **Audio Output** panel. Click **Stereo** to maintain a 2 channel audio output. Select **Dual Mono** when there is only single channel source audio. Dual mono provides two channel output from a single channel input or mixes left and right channels and sends the mix to both the left and right outputs.

The audio delay control allows the user to achieve audio-to-video synchronization when timing differences occur between the audio and video streams. By default, the audio and video streams are synchronized (Audio Delay: = 0 mS). Audio delay is adjusted between +255 to -255 milliseconds.

- Positive delay results in audio lagging video by the set value.
- Negative delay results in audio leading video by the set value.

NOTE: The source input must be restarted for an audio delay change to take effect.

Output audio can be toggled on and off using the master **Mute** button.

A master level control graduated in 1 dB steps from -100 dB (full attenuation) to 0 dB (unity gain) to set or match output levels. Move the slider or enter a value in the field below the slider to adjust volume from 0 (maximum output) to -100 (no output).

Audio mute and level settings are retained through reboot or power cycle events.

On Screen Display

The **On Screen Display** (OSD) page (see figure 26) enables the display of realtime information about the video output and device operation on a connected display (see figure 27).

On Screen Display

Status Information

Enable OSD

Duration (Seconds): 5

Position: Left-Top

Save Cancel

Progress Bar

Enable Progress Bar

Duration (Seconds): 5

Position: Center-Bottom

Save Cancel

Figure 26. Configuration Page - On-Screen Display

Status Information Panel

The **Status Information** panel controls the timing and position of the on-screen status information that includes stream, network condition, and device information.

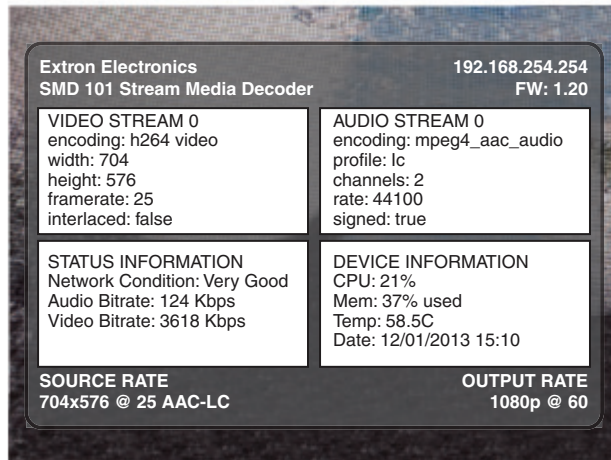


Figure 27. On-screen Status Information Panel

Enable OSD — Click this checkbox to enable the status information.

Duration (Seconds) — Set the time in seconds the status information is on screen after the start of playback using the adjustment arrows or enter the time (in seconds) directly. Default is 5 seconds, maximum is 500 seconds. 501 seconds = always on. The IR remote can toggle it on or off.

Position — Select the screen position from one of nine positions (left-top (default), center-top, right-top, left-center, center-center, right-center, left-bottom, center-bottom, right-bottom) using the drop-down list.

Progress Bar Panel

The progress bar is similar to the information shown underneath the live confidence display in the **Player Control** panel. The bar shows the clip or filename and current playback location. The current playback position is at the left of the progress bar. The total clip length is on the right when a clip is selected and its length is known. If the playback is a network stream, the total length is not likely known and the total time is blank. If the current selection is part of a playlist, or channel list, the channel number and name (if any) is at the upper right corner (**Ch 2** in figure 28).

The progress bar tracks the current playback position across the bar. Blue indicates the file and gray indicates buffer fill.

Enable Progress Bar — Click this checkbox to enable or disable the progress bar.

Duration — Use the adjustment arrows or enter the time directly in the duration field to set the time (in seconds) the progress bar is displayed. Default is 5 seconds, maximum is 500 seconds. 501 indicates the progress bar is always on. The IR remote can toggle it on or off.

Position — Using the drop-down list, select the screen position of the OSD from one of nine positions: left-top (default), center-top, right-top, left-center, center-center, right-center, left-bottom, center-bottom, and right-bottom.

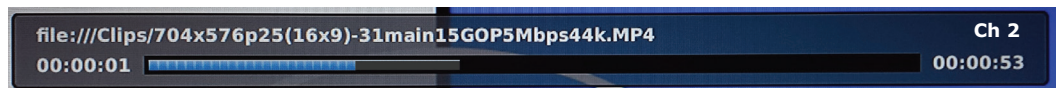


Figure 28. Progress Bar OSD

Automation

The **Automation** page (see figure 29) provides features and configuration options that are normally set once and continue automatically.

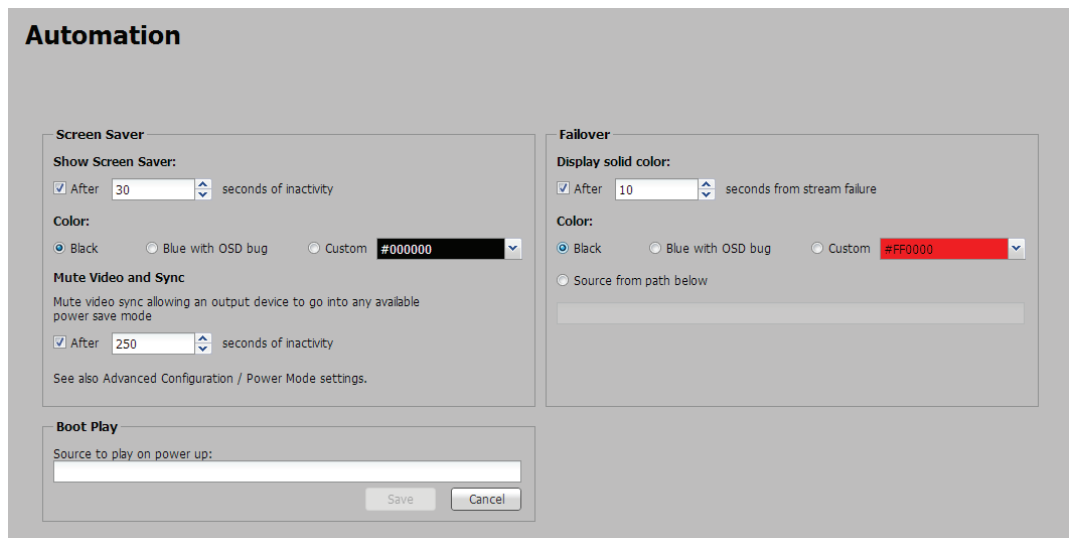


Figure 29. Configuration Page - Automation

Screen Saver panel

The screen saver activates when there is inactivity. Settings include:

Show Screen Saver: — The length of inactivity time (no stream decode, no commands received, and no user input) before the screen saver starts. Click **After** to enable the screen saver mode, then enter or select the number of seconds of inactivity before the screen saver activates.

Color: — The color of the screen saver. There are three choices:

- **Black** presents a black screen.
- **Blue with OSD bug** displays a blue background with the message: SMD101: No Source Input.
- **Custom** allows selection of a color using the drop-down pallet.

Mute Video and Sync — When the screen saver is active, sync is still sent to the connected display. For the display to enter its own power save mode (if equipped), sync must also stop. Check **After** and enter the number of seconds of inactivity before sync is discontinued, up to 500.

Boot play

Boot play is a feature that allows a source to be defined for automatic playback immediately after power to the SMD 101 is restored or cycled. The boot play source can be a clip, file, or playlist. Select a source (a stream URL from the network, or a playlist or filename for locally stored clips) to load on each power up cycle or reboot. Right-click the file and select **Set as Boot Play**, or cut and paste the file into the boot play field. Alternately, type the folder location or stream URL of the desired file directly into the entry field.

Failover

Defines the player response in the event stream data is interrupted. The time to wait after the stream is lost, the solid background color that plays in the event of stream loss, and an alternate source clip, image, playlist, or stream on the local drive can be selected.

Display Solid Color — The length of time after a stream loss before a solid color screen is output to the connected display. Click the **After** checkbox to activate the failover mode. Select the time after the stream loss is detected before the solid screen is output.

Color — The color of the failover output. There are three choices:

- **Black** presents a black screen.
- **Blue with OSD bug** displays a blue background with the message: SMD101: No Source Input.
- **Custom** allows selection of a color from the drop-down list color pallet.

Source from Path Below: — Select a clip or image to display upon entering failover mode. The clip or image must be on the local storage media. Right-click the file and select **Set as Failover Play** or cut and paste the file into the field. Alternately, click **Source from Path Below:** and type the folder location of the file into the entry field.

NOTE: Failover images or clips should always be located on local storage. This provides a more reliable source in the event of network failure or the loss or relocation of the original source.

Advanced Configuration Page

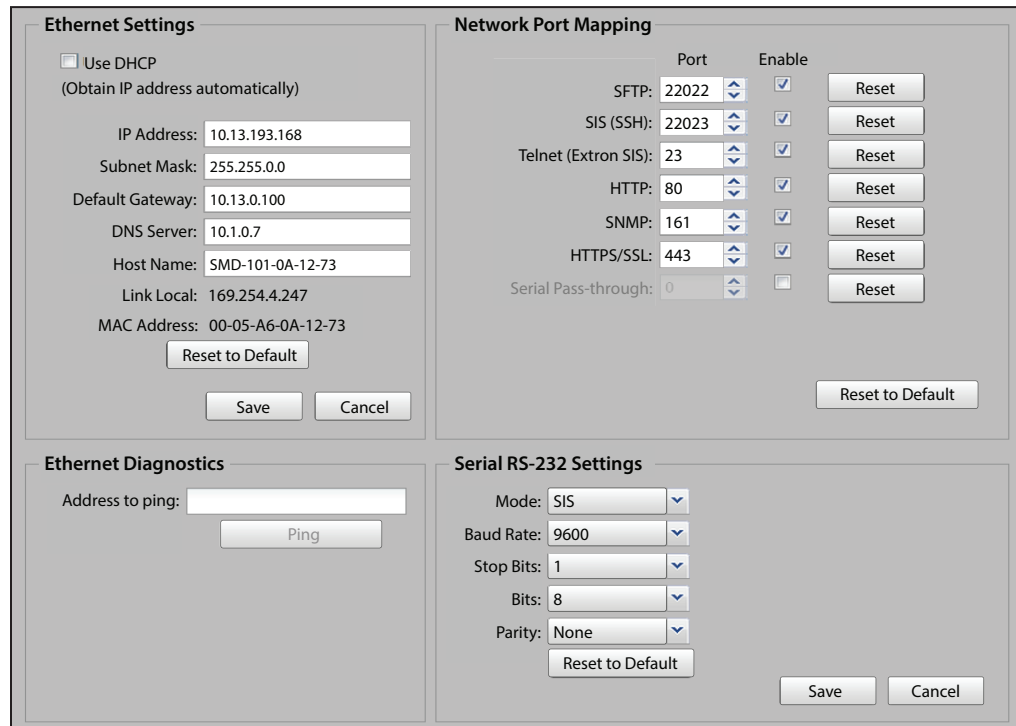
The **Advanced Configuration** page provides options that are not frequently changed. The page is always available, but options are dimmed depending on the current user privileges. It provides initial setup and administrator level configuration.



Figure 30. Advanced Configuration Ribbon

Connection

The **Connection Settings** page allows configuration of parameters related to the LAN (Ethernet) and serial ports.



Port	Enable
SFTP: 22022	<input checked="" type="checkbox"/>
SIS (SSH): 22023	<input checked="" type="checkbox"/>
Telnet (Extron SIS): 23	<input checked="" type="checkbox"/>
HTTP: 80	<input checked="" type="checkbox"/>
SNMP: 161	<input checked="" type="checkbox"/>
HTTPS/SSL: 443	<input checked="" type="checkbox"/>
Serial Pass-through: 0	<input type="checkbox"/>

Figure 31. Connection Settings Page

Ethernet Settings panel

This panel provides basic ethernet configuration including:

- **Use DHCP** — Click the checkbox to enable DHCP. The IP Address, Subnet Mask, Default Gateway, and DNS Server fields dim.
- **IP Address:** — Under DHCP control, this field displays the assigned IP address. Otherwise, enter a static IP address here.
- **Subnet Mask:** — Under DHCP control, this field displays the assigned Subnet Mask. Otherwise, enter a mask here.
- **Default Gateway:** — Under DHCP control, this field displays the assigned default gateway address. Otherwise, enter the default gateway address here.
- **DNS Server:** — Under DHCP control, this field displays the assigned DNS Server address.
- **Host Name:** — Enter a name for the device here. The name assists identification.
- **Link Local:** — An IP address automatically negotiated by the SMD 101 when not assigned a static IP address and DHCP is disabled, or when DHCP is enabled but a DHCP server is not found.

- **MAC Address:** — The MAC address of the connected SMD 101. The address is also available on the rear panel label.
- **Reset to Default:** — Resets all network configuration to default.
- **Save** — Saves manual network configuration changes.
- **Cancel** — Discards manual network configuration changes.

NOTES:

- The DHCP assigned Gateway and DNS address are retained after DHCP is deselected. They are reset using the reset button on the rear panel (see **SMD 101 Rear Panel Reset** on page 12) or using the web-based user interface (see **Reset Device** on page 42).
- The network interface restarts when changes are saved.

Ethernet Diagnostics panel

This panel provides a ping utility for troubleshooting network connection issues.

- **Address to ping:** — Enter an IP address (10.13.193.168) or a complete host name (www.extron.com) in this field, then click **Ping** to start the utility. A dialog box with the results of the ping opens.

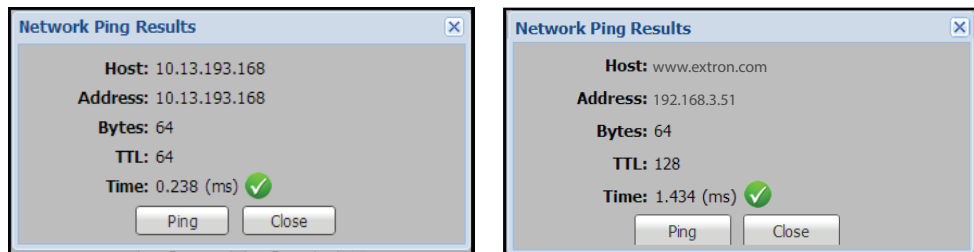


Figure 32. Network Ping Dialog

Network Port Mapping panel

This panel provides basic Ethernet configuration that includes:

- **SFTP:** — Set the port number for SFTP here. Check **Enable** to use the port.
- **SIS (SSH):** — SSH provides a method for a SSH client to establish a secure connection to the player at port 22023, which then supports the SIS command set.
- **Telnet (Extron SIS):** — The port used by DataView or other telnet programs to access the SMD 101. Check **Enable** to use the port.
- **HTTP:** — Set the port number for HTTP here. Check **Enable** to use the port.
- **SNMP:** — Set the port number for SNMP here. Check **Enable** to use the port.
- **HTTPS/SSL:** — Set the port number for HTTPS here. Check **Enable** to use the port.

NOTE: Changing or disabling this port while using the default port (80) causes a loss of the connection. Try https://<SMD101 IP> to reconnect to port 443.

- **Serial Pass-through:** — Set the port number for the serial pass-through feature here. Check **Enable** to use the port.
- **Reset to Default** — Click to return all port mappings to default.

Default port numbers are shown in **figure 31** on the previous page. Click the checkbox after the port number field to enable the port entry in the associated port field. Click **Reset** to return the port number to default.

Serial RS-232 Settings panel

This panel provides basic serial port configuration that includes:

- **Mode:** — Configures the port to receive SIS commands from an external host controller, or to pass communication between the "serial pass-through" network port and the serial port. Select the mode from the drop-down list:
 - **SIS** — To set the serial port to the default configuration for SIS communication.
 - **Direct Access** — To set the serial port to enable serial data passthrough.
 - **Disable** — To prevent all serial port communications.

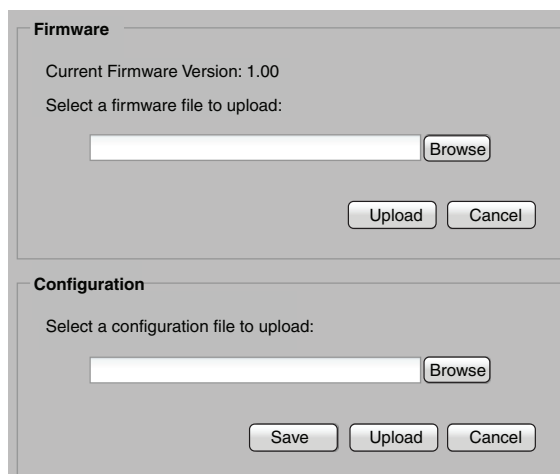
Click **Save** to enable the selection.

In addition, the serial port can be configured manually with the following drop-down lists:

- **Baud Rate:** — Select the baud rate for the RS-232 port from this drop-down list.
- **Stop Bits:** — Select the stop bits for the RS-232 port from this drop-down list.
- **Bits:** — Select the data bits for the RS-232 port from this drop-down list.
- **Parity:** — Select the parity for the RS-232 port from this drop-down list.
- **Reset to Default** — Click **Reset to Default** to return the port mappings to their defaults.
- **Save/Cancel:** — Click **Save** to save new RS-232 settings. Click **Cancel** to discard all changes and return to the previous settings.

Firmware Loader

The **Firmware Loader** page provides a way to upload and install new firmware and to export configuration settings from the connected SMD 101, or import saved configuration settings from another SMD 101. Check for firmware updates on the product page at the Extron website. Download the firmware to a location on the computer connected to the SMD 101.



The screenshot shows a web interface for the Firmware Loader. It is divided into two main sections: "Firmware" and "Configuration".

Firmware Section:

- Current Firmware Version: 1.00
- Select a firmware file to upload:
- A text input field with a "Browse" button to the right.
- Below the input field are "Upload" and "Cancel" buttons.

Configuration Section:

- Select a configuration file to upload:
- A text input field with a "Browse" button to the right.
- Below the input field are "Save", "Upload", and "Cancel" buttons.

Figure 33. Firmware Loader Page

NOTE: During a firmware upgrade, the file temporarily resides in the SMD 101 local user memory. There must be sufficient space available to accommodate the firmware file for the update to succeed. For example, a 52 MB firmware upgrade file requires at least 52 MB of unallocated memory. Prior to an update, check the available internal memory (see [Status Page](#) on page 45). If there is not at least enough to store the entire firmware file, delete or remove files from the internal memory until there is.

Firmware panel

- **Current Firmware Version:** — Displays the active firmware version. Compare the version with the online version on the SMD 101 product page at the Extron website, to determine if you are running the most current firmware.
- **Select a firmware file to upload:** — This field displays the location of the update firmware file. Click **Browse**, then locate and select the firmware file.
- **Upload:** — After the firmware file is selected, click **Upload** to begin the update. **Cancel** stops the update and clears the **Browse** field.

NOTE: Depending on the browser, the firmware upgrade path displayed in the browse folder field is not the same as the file path. The following list shows how the upgrade path appears for the recommended browsers uploading a firmware file named "49-244-50-0.18.0001.eff-full".

- Chrome: C:\fakepath\49-244-50-0.18.0001-full.eff
- Firefox: 49-244-50-0.18.0000-full.eff
- IE: C:\upgrades\Peanut(SMD)\Build 0.18.0000\49-244-50-0.18.0000-full.eff

A dialog opens to indicate upload progress. When the upload completes, the device firmware is updated. After the update, the SMD 101 automatically reboots.

NOTE: Playback stops, and the connection is lost during the reboot, requiring a refresh of the browser once the reboot is complete.

Configuration panel

A configuration file contains a snapshot (or record) of the relevant settings of the SMD 101. The settings are divided into two files: box.cfg with general settings, and ip.cfg with the network configuration. These two files enable multiple SMD 101 devices to be configured identically (saving setup time), or to backup the current configuration of the SMD 101.

Multiple config files can be saved, then restored in order to customize an SMD 101 for specific tasks.

To configure multiple devices with a single config file:

1. Configure the first SMD 101.
2. Click **Save** to place the configuration file in a location accessible from each SMD 101. The drop-down list provides two options:
 - **Box Config** — Select this option to save all settings including channel presets but excluding network settings from both the **Configuration** and **Advanced Configuration** pages.
 - **IP Config** — Select this option to save all network related settings. The file contains additional reference information such as the device name, date, and time, but only the network settings are restored.

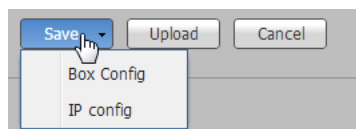


Figure 34. Save Config File

The files are saved to the host computer downloads folder and also saved to the SMD 101 local memory nortxe-backup folder.

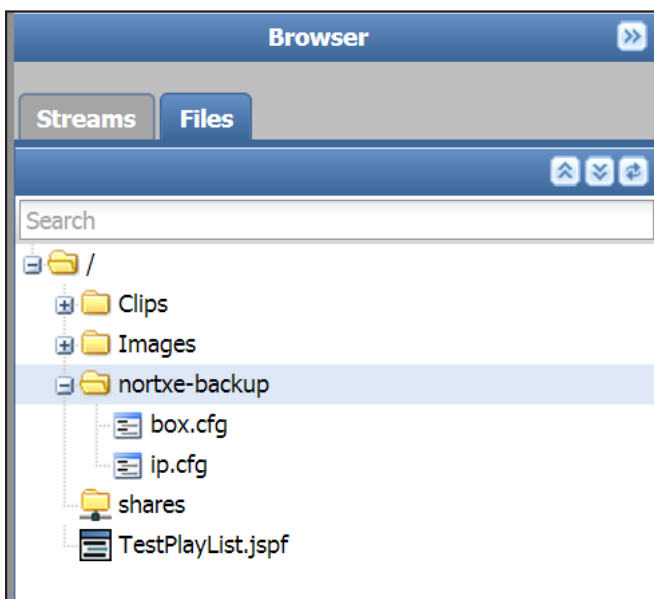


Figure 35. Configuration Files

NOTES:

- Using Firefox or Chrome, the config files are automatically named **box.cfg** and **ip.cfg** and saved to both the SMD 101 local memory (in the **nortxe-backup** folder) (and to the host computer downloads folder (or designated location if changed)). From the host computer, they can be renamed or moved to a folder selected by the user with a standard file browser.
- Using MS Internet Explorer, after saving the files to local memory, the browser remains on a page with only the configuration text displayed. Press the back button to return to the Player page.
- IE does not save the config files to the host computer. You must save the file using cut and paste from the open web browser page, or extract the locally saved files from the SMD 101 local memory to the host computer (see [Copying Config Files Using Internet Explorer](#) on page 92).

To upload a configuration file to the same or another SMD 101:

- 1. Select a configuration file to upload:** — This field displays the location of the configuration file for cloning a SMD 101, or to reload a custom configuration for a specific task. Click **Browse** to locate and select the file from the host computer or local memory.
- 2. Upload:** — Click **Upload** to begin the configuration change with the selected file. **Cancel** stops the update and clears the **Browse** field.

After a configuration file (**box.cfg** or **ip.cfg**) is uploaded, the SMD 101 automatically restarts and applies the changes. The process takes about a minute.

Exec/Power Mode

The **Executive and Power Mode** page allows configuration of device control and power settings.

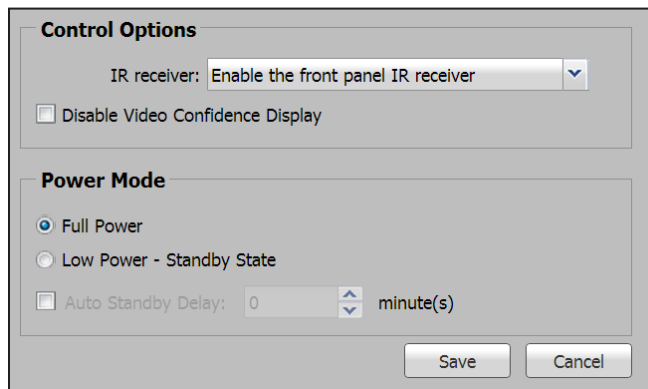


Figure 36. Exec/Power Mode Page

Control Options Panel

- **IR receiver:** — The front panel IR receiver or rear panel IR receiver input can be enabled or both can be disabled. Select from the following options:
 - **Disable all IR reception** — When selected, ignores all IR commands.
 - **Enable the front panel IR receiver** — When selected ignores IR commands from the rear panel wired IR input.
 - **Enable the rear panel IR receiver** — When selected, ignores IR commands from the front panel IR receiver.
- **Disable Video Confidence Display** — Click this box to disable the video confidence display on the player controls panel. Click again to enable the display.

Power Mode Panel

The SMD 101 features an energy conserving mode. Low power standby stops the stream and places all processing in a low power condition awaiting external commands.

- **Full Power:** — Click to select normal operation (default).
- **Low Power - Standby State:** — Click to immediately enter standby mode. Normal operation can be resumed by clicking the full power button, by sending a power on/off command from the IR remote (if enabled in control options), or when a SIS command that sets a value is received on the network or serial ports (see [Automation](#) on page 32).
- **Auto Standby Delay:** — Enter a time in minutes or use the list buttons to scroll to the desired time selection the device waits after the inactivity period is met before entering standby mode. Default: off.

NOTE: When the SMD 101 comes out of standby mode, the first clip can fail to load or play automatically. Any "set" command causes the SMD 101 to resume full power state, but command execution could be delayed. For best results, before sending any other commands, always send a `0psav` SIS command to bring the SMD 101 out of standby (see [Power Save and Standby](#) on page 68).

Date and Time

The **Date and Time** page allows automatic sync of the date and time from the connected control device, or provides manual setting of the date and time, timezone, and daylight saving mode.

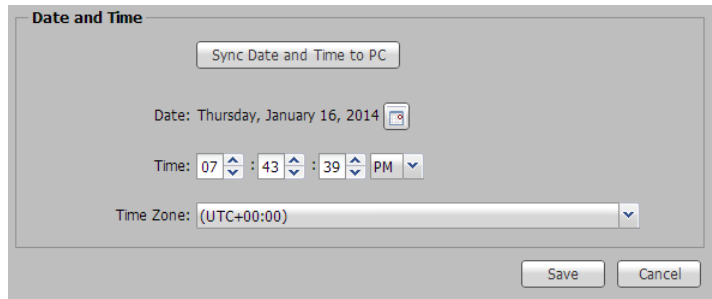


Figure 37. Date and Time Panel

- **Sync Date and Time to PC** — Click this button to force the SMD 101 date and time to sync with the connected control PC.
- **Date** — Press the **Calendar** icon on the right side of this field to manually select the current date from the calendar dialog box.
- **Time** — Use the scroll list buttons, or enter the time directly to set the current time.
- **Time Zone** — Use the drop-down list to select your time zone.
- **Save/Cancel** — Save the time and date or cancel the entries.

Password

The password page provides user and administrator (admin) ID passwords for security and to limit access. No other login IDs are available. The admin password provides access to all pages and all selections to anyone logging on with **Login ID: admin**. Prior to an admin password being set, there is no security challenge to access the SMD 101. Any user who accesses the interface has full administrator privilege.

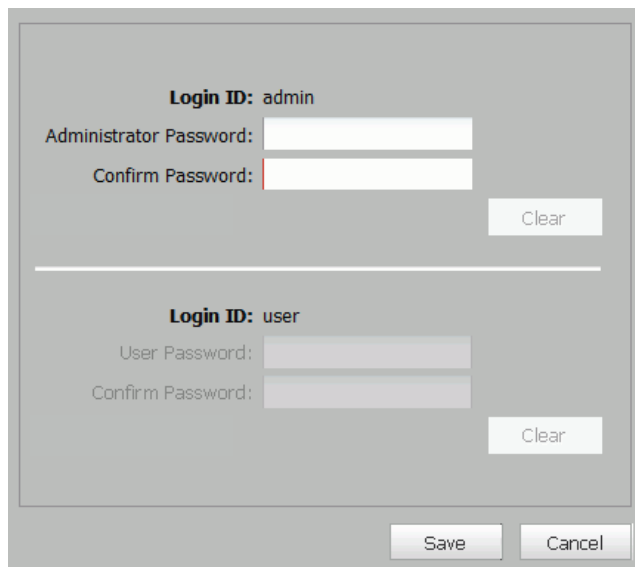


Figure 38. Password Page

An administrator password can be set without setting a user password. When only an admin password is enabled, the user login is inactive. All users must login using the admin ID and administrator password for access.

When an admin password and user password are both set, logging in with the user ID and password limits access. Full player control is allowed, but configuration options are limited including:

Player Page:

- Create a new playlist, but cannot modify or delete an existing playlist.
- Full player control
 - Use play, stop, pause, loop, go to previous or following buttons
 - Select items to play from input streams, files, channels, favorites, history lists, playlists

Configuration Page:

- Video, Audio, and OSD panels — Full Access
- Automation — View Only Access (pages are dimmed)

Advance Configuration Page:

- View only access (all selections are dimmed)

Device Information Page:

- View only access (all selections are dimmed)

Status Page:

- View only access (all configurations are dimmed)

An attempt by a non-admin user to access a page or selection that requires administrator security opens a dialog box stating the privileges violation.

An administrator password must be enabled before a user ID and password can be set.

NOTE: Passwords must be less than 12 characters long, no spaces, and consist of alpha-numeric characters only.

To set an administrator password:

1. Type a password in the **Administrator Password:** field.
2. Duplicate the password in the **Confirm Password:** field.
3. Click **Save**.

To clear the administrator password, you must be logged on the SMD 101 with administrator privileges.

1. In the **Login ID: admin** panel:, click **Clear**.
2. Click **Save**.

The user interfaces (DWP, SIS, SFTP) no longer require a password. The user is logged out and automatically logged back in as the administrator.

NOTE: If a user password is active, clearing the administrator password also clears the user password.

To change an admin password, you must be logged on the SMD 101 with admin privileges. In the **Login ID: admin** panel:

1. Click **Clear** to remove the previous password, or type a new password in the **Administrator Password:** field.
2. Duplicate the password in the **Confirm Password:** field.
3. Click **Save**.

The new password is now current and the SMD 101 automatically logs off. Login with the new password to continue.

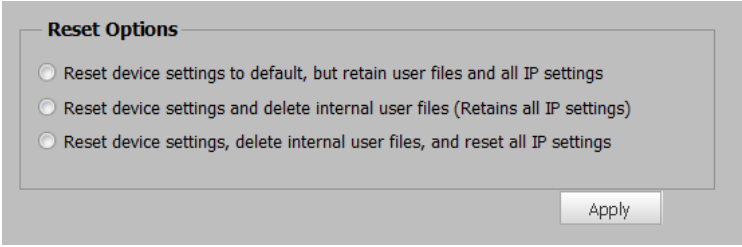
To set, change, or clear a user password you must be logged on as an admin.

1. Click **Clear** to clear a previous password, then type a password in the **User Password:** field. If this is the first time a password is set, type the password in the **User Password:** field.
2. Duplicate the password in the **Confirm Password:** field.
3. Click **Save**.

Reset Device

Provides several options to reset the SMD 101 if hardware or software conditions require.

NOTE: Proceed with caution. Some reset modes intentionally delete all user files, media content, and settings from internal memory.



Reset Options

- Reset device settings to default, but retain user files and all IP settings
- Reset device settings and delete internal user files (Retains all IP settings)
- Reset device settings, delete internal user files, and reset all IP settings

Apply

Figure 39. Device Reset, Reset Options

- **Reset Device settings to default** — Resets all hardware and software to default condition, but retains user files and IP settings for communication.
- **Reset Device settings and delete internal user files (Retains all IP settings)** — Resets all hardware and software to default condition, deletes user files stored in internal memory, and retains IP settings for communication.
- **Reset Device settings, delete internal user files, and reset all IP settings** — Resets all hardware and software to default condition including IP settings.

NOTE: If the control PC is connected via the Ethernet port, communications is broken. Use the default IP address (192.168.254.254), the front panel config port, or the rear panel RS-232 port to reconnect.

To select a reset, click the button to the left of the desired option. The radio button lights. Click **Apply** to begin the reset. See the [SMD 101 Reset Summary](#) on page 83 for a comparison of the reset modes.

SNMP

The Simple Network Management Protocol (SNMP) page facilitates the exchange of basic network management information to provide monitoring, control, and to collect error information.

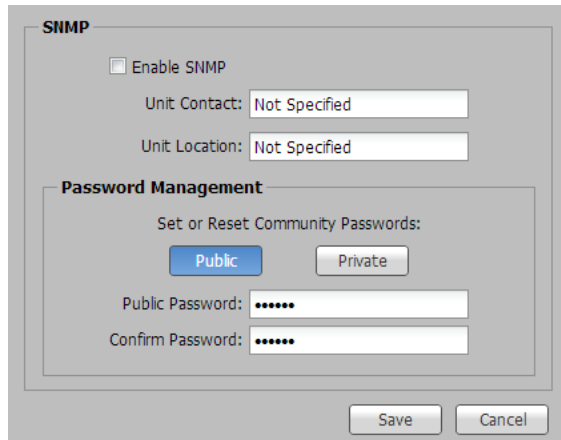
The image shows a web-based configuration page for SNMP. At the top, there is a section titled "SNMP" with a checkbox labeled "Enable SNMP". Below this are two text input fields: "Unit Contact:" with the value "Not Specified" and "Unit Location:" with the value "Not Specified". A sub-section titled "Password Management" contains the text "Set or Reset Community Passwords:" followed by two buttons: "Public" (highlighted in blue) and "Private". Below these are two password input fields: "Public Password:" and "Confirm Password:", both containing masked characters (dots). At the bottom right of the form are "Save" and "Cancel" buttons.

Figure 40. SNMP Page

SNMP panel

- **Enable SNMP** — SNMP is disabled by default. Check this box, then click **Save** to enable SNMP. If SNMP is enabled, a strong password (community strings) is recommended.
- **Unit Contact** — The name of the person to contact with questions on operation or configuration. To change the contact information, enter the new information in the field, then click **Save**.
- **Unit Location** — The location of the device. For easier identification on the network, enter a descriptive name in this field, then click **Save**.

Password Management panel

Access to the SNMP page can be public or private. Public access provides read-only access to all SNMP features. Private access allows both read and write access.

The two passwords must be different to provide security from unwanted changes.

Click **Public** or **Private** to set or reset the associated access password. Enter the new password, then enter it again in the **Confirm Password** field. Click **Save** to make the password current.

Device Information Page

Displays both device (factory) and user defined information.

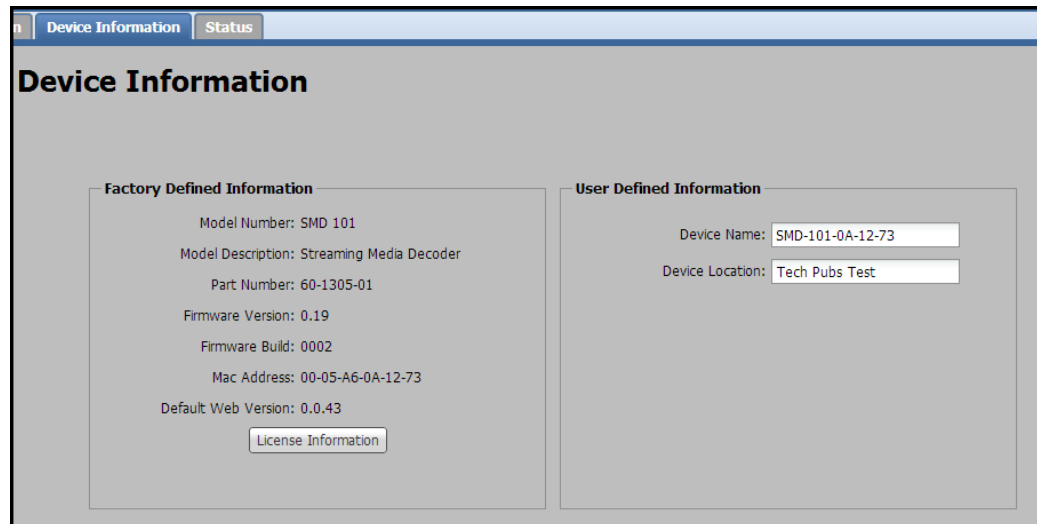


Figure 41. Device Information Page

Factory Defined Information panel

Displays read-only technical information about the SMD 101 including:

- **Model Number** — The model number of the device.
- **Model Description** — The marketing description of the device.
- **Part Number** — The sales number of the device.
- **Firmware Version** — The current firmware version.
- **Firmware Build** — The specific build number of the firmware.
- **MAC Address** — The Media Access Control (MAC) address of the device.
- **Default Web Version** — This number indicates the revision of the SMD 101 embedded web pages.
- **License Information** — Click this button to open the License Information dialog.

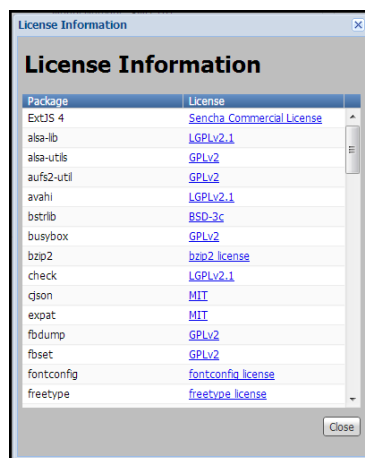


Figure 42. License Information Dialog

The dialog lists all third-party applications used by the SMD 101 with links to the license agreements. Click on the blue links to open the agreement page.

User Defined Information Panel

Displays information input by the user including:

- **Device Name** — A unique name to identify the device on the network.
- **Device Location** — (optional) The location of the device.

NOTE: The device name and location must begin with an alpha character. Other restrictions are detailed in the help file and tool tips.

Status Page

The **Status** page displays current operating condition and statistics related to the performance of the device. The page information updates every ten seconds.

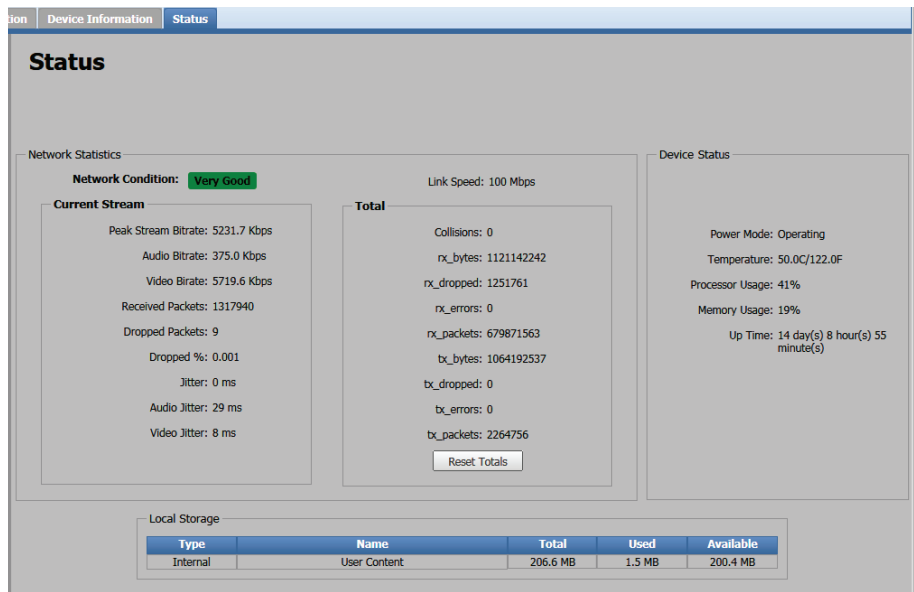


Figure 43. Status Page

The **Status** page provides network statistics with information on the performance of the SMD 101. It includes statistics organized into three panels: **Network Statistics**, **Device Status**, and **Local Storage**.

Network Statistics panel

The **Network Statistics** panel is divided into two subpanels: **Current Stream** and **Total**.

Network Conditions — Monitors and displays information concerning network traffic including:

- **Network Condition:** — Very Good, Good, Poor, or Disconnected.
- **Link Speed:** — The speed of the connection negotiated with the link partner (1 Gbps, 100 Mbps, 10 Mbps).

The **Current Stream** panel displays information about the currently playing stream, clip, or file including:

- **Peak Stream Bitrate:** — Populated for streams only. The combined audio and video bit rate for the current stream.
- **Audio Bitrate:** — The current stream audio bitrate.
- **Video Bitrate:** — The current stream video bitrate.
- **Received Packets:** — Total received packet count for the current source since playback of the stream started.

- **Dropped Packets:** — Total dropped packets for the current source since playback of the stream started.
- **Dropped %:** — Total percentage of dropped packets for the current source since playback of the stream started.
- **Jitter:** — For transport streams, audio and video streams are combined for this value.
- **Audio Jitter:** — For elementary streams, the audio stream jitter in milliseconds.
- **Video Jitter:** — For elementary streams, the video stream jitter in milliseconds.

The data in all current stream categories resets automatically when a new stream is selected or when play stops.

The **Total** panel displays a running total of raw network statistics from the interface for all streams, files, or clips played since the last manual reset including:

- **Collisions:** — Always zero for full duplex links.
- **Rx_Bytes:** — Receive data statistics.
- **Rx_dropped:** — Receive data statistics.
- **Rx_errors:** — Receive data statistics.
- **Rx_packets:** — Receive data statistics.
- **Tx_Bytes:** — Transmit data statistics.
- **Tx_dropped:** — Transmit data statistics.
- **Tx_errors:** — Transmit data statistics.
- **Tx_packets:** — Transmit data statistics.

Press **Reset Totals** to return the values in the **Total** panel to zero. The information monitoring begins automatically after each reset.

Device Status panel

Device Status panel — Monitors general operating conditions including:

- **Power Mode:** — Operating or standby.
- **Temperature:** — Current internal temperature of the device. Readings above 60°C could indicate excessive ambient temperature or insufficient ventilation and should be investigated.
- **Processor Usage:** — A general indication of the device workload.
- **Memory Usage:** — Provides an indication of volatile memory usage. It is typically 15% after a power cycle, and expected to approach 100% after playing large clips from shared network folders.
- **Up Time (operating) Hours:** — The time in days, hours, and minutes since the SMD 101 was powered up or reset.

Local Storage panel

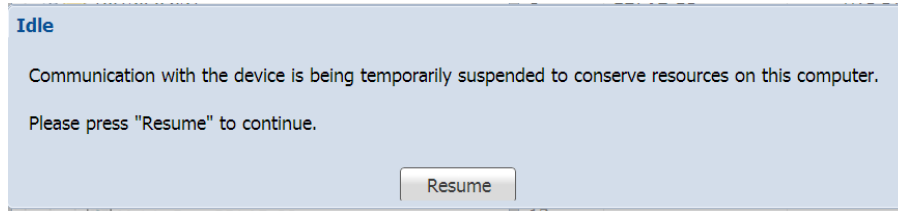
The **Local Storage** panel provides about the user accessible non-volatile storage including:

- **Type** — Internal
- **Name** — User Content (can not be changed)
- **Total** — Total size of the internal non-volatile storage in megabytes.
- **Used** — Size of the files currently in local storage in megabytes.
- **Available** — Currently unallocated drive space.

NOTE: **Used** plus **Available** may not exactly add up to the **Total** size due to system requirements.

Browser Idle

To conserve the host computer resources, after 60 minutes, the browser accessing the SMD 101 web interface stops requesting status and video confidence updates. An idle dialog box opens (see below).



This feature does not idle or affect SMD 101 operation. It suspends the automatic browser updates for the video confidence display to conserve network and PC resources. Press **Resume** to force the browser to reconnect to the SMD 101 and begin normal updates.

Advanced Player Configuration

The SMD 101 can play video on demand, video from a network share, and video from its own local memory. The following section includes SMD 101 configuration for playing those videos and how to configure the SME 100 for stream discovery that includes the following topics:

Loading Content to Local Storage Using SFTP

Play Video on Demand

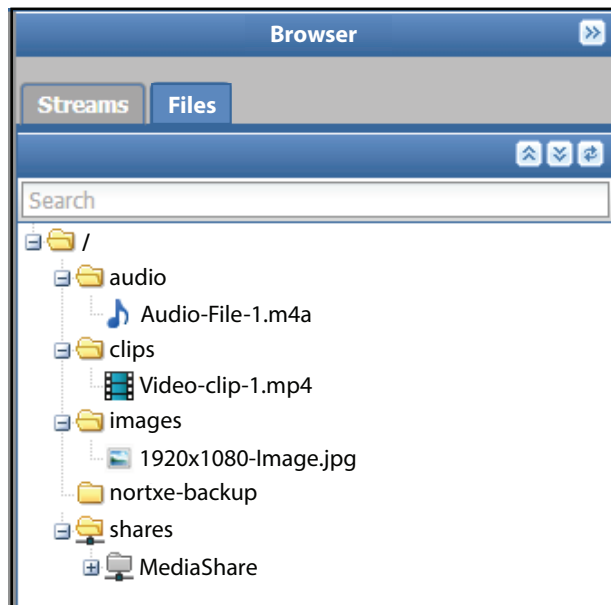
SME 100 Stream Discovery

Connecting to Streams Without SAP Announcements

NOTE: In large systems, streams are easier to locate if the encoders are configured for SAP announcements.

Loading Content to Local Storage Using SFTP

The SMD 101 has internal memory reserved for local content. Local content is viewed from the browser **Files** tab. A typical folder structure for the internal memory is shown below.



NOTES:

- TMP folders are not accessible.
- The nortxe-backup folder only exists after configuration files are saved.

Content (up to 175MB total) can be transferred directly to the SMD 101 from a computer on the same network using an FTP client such as Filezilla, a free FTP program available here:

<https://filezilla-project.org/download.php?type=client>

Download and install the FileZilla program.

After installation, run the program.

1. From the toolbar select **File>Site Manager**.
The **Site Manager** dialog opens.

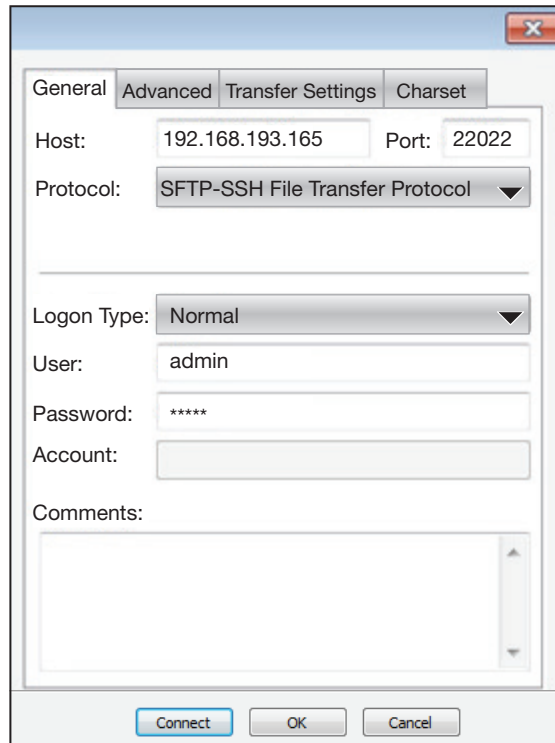


Figure 44. SFTP Site Manager Dialog

2. Enter the SMD 101 IP address in the **Host** field.
3. Enter 22022 in the **Port** field.
4. Select **SFTP** in the **Protocol** drop-down list.
5. Select **Normal** from the **Logon Type** drop-down list.
6. Enter admin in the **User** field.
7. Enter the SMD 101 admin password if one is set. Otherwise leave the **Password** field blank.
8. Click **Connect** to start the connection routine.

Filezilla establishes a connection to the SMD 101 at the IP address in the **Host** address and logs in.

Filezilla defaults to the root of the SMD 101 local memory (on the right in figure 45) and shows all files and folders currently in memory. Users can create folders only in the top level (root) of the SMD 101 file system.

In figure 45, a file is uploaded from the PC to the SMD 101 **Clips** folder.

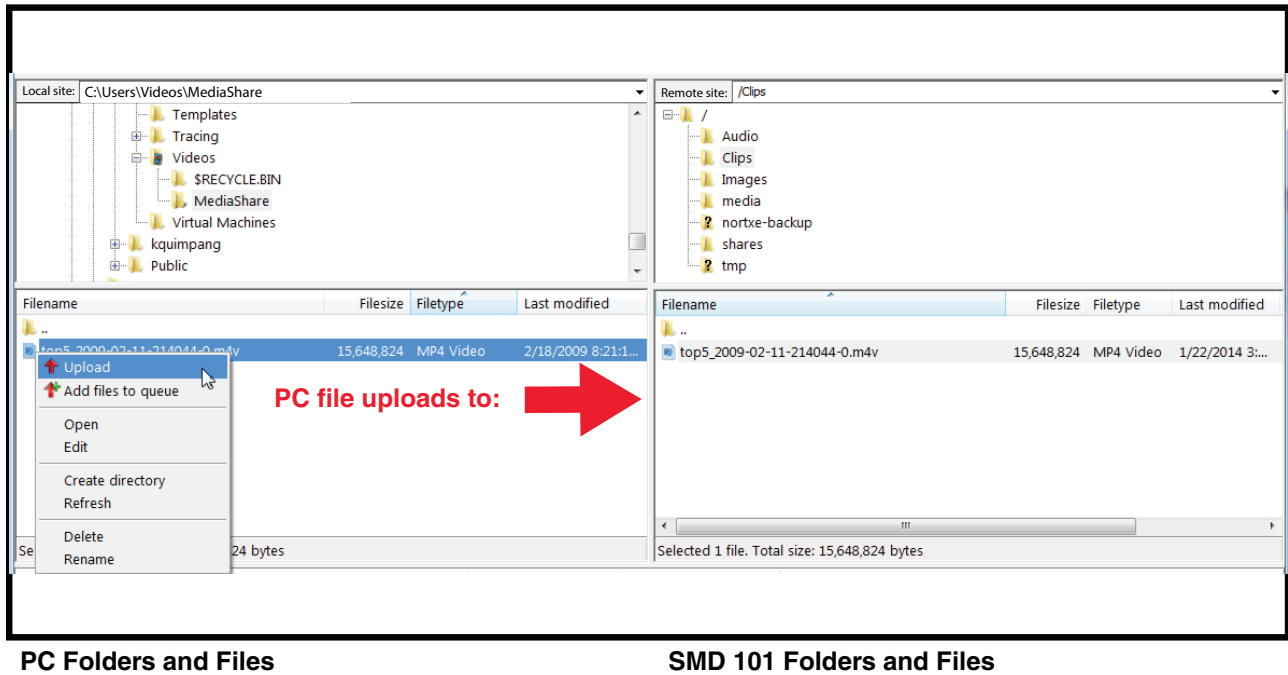


Figure 45. Filezilla Folder Browser

NOTES:

- The media folder is reserved for system use. **DO NOT** upload user content files (clips, audio, or images) to this folder.
- Using SFTP to transfer files to the SMD 101, if the file size exceeds the available space, the file is truncated and is not playable. When working near the capacity limit of the SMD 101, pay close attention to the SFTP client messages for transfer errors.

Right-click on a file for quick access to file and folder functions. See the Filezilla help files for additional information.

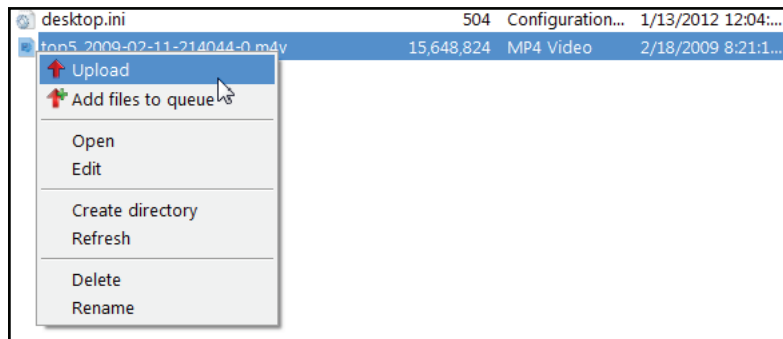


Figure 46. Filezilla Right-click Menu

Play Video on Demand

The SMD 101 can play video on demand from network shares and local storage supporting the following file types:

Video: mp4, ts, m2t, m2ts, mov*, 264, m4v, flv*, and sdp.

NOTE: *Supports files that use H.264 encoding and AAC audio only.

Images: bmp, jpg, jpeg, tif, tiff, png, and gif.

NOTE: TIFF files using JPEG compression are not supported.

Audio: wav, aac, and m4a.

Playlists: jspf, m3u, m3u8, pls, and xspf.

Play Video from a Network Share

The shared folder must be added to the player browser file list.

To add a shared file folder:

1. From the files browser, click **Network Shares**. The Network Shares dialog box opens.

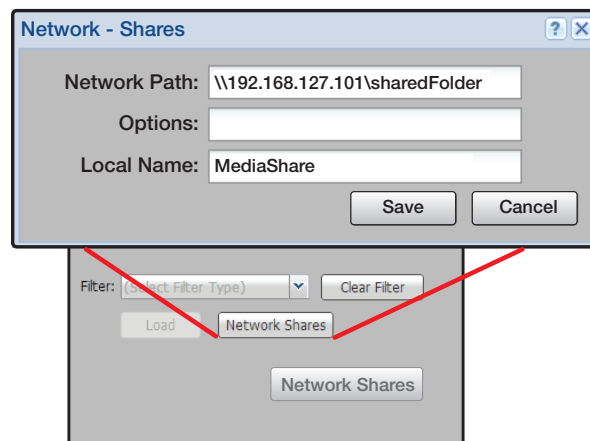


Figure 47. Network Share Configuration

2. Enter the path of the shared folder.

Network Path: Server address (or server name) and share name format depending on protocol:

SMB/CIFS: \\<server_ip_address>\<share_name>\<optional_directory>

NFS: server:/<share name> where *server* can be the IP address or host name of the server.

NOTE: Network shares supports both IP address and host name path options. For example, the host name in figure 47 is HOSTSERVER. The **Network Path:** name is then: \\HOSTSERVER\SharedFolder.

3. If necessary, enter additional switches into the options field (see **Network Shares Dialog** on page 85). This field is used to pass credentials, if required. By default, the CIFS mount adds "user=" and "guest=" to the mount options, for an anonymous login. No spaces are allowed between the user and password (Example: user=username,pass=password).

4. In the Local Name field, enter a name for the shared file to ease identification in the browser.

NOTE: The local name for the shared folder (in this example, **MediaShare**) is optional. If the user does not define a name, it defaults to the server folder name.

5. Click **Reconnect at power up**: if you want the connection to persist.
6. Click **Save**.

The SMD 101 connects to the shared folder and places it under the default Shares folder of the files browser (see figure 48).

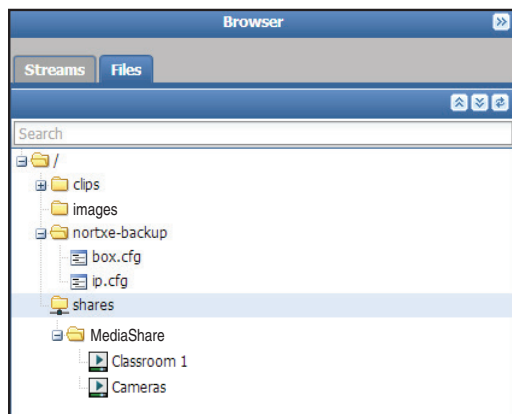


Figure 48. Browser Shares Folder

To play a file shared on the network share, from the browser files tab, drag and drop the selected file in the Shares folder in the player panel (see **Player Controls** on page 16).

NOTE: Reliable playback of content from network shares depends on server and network performance. If playback issues are apparent, verify that the server and network performance are sufficient for the content bitrate, or try a lower bitrate clip.

SME 100 Stream Discovery

For SME 100 stream discovery in the SMD 101 stream browser window (see [Browser Panel - Streams](#) on page 19), the SME 100 must have both Stream Control and SAP Control enabled. Figure 49 shows the SME 100 settings. From the SME 100 default web page (see the *SME 100 User Guide*), select the **Encoder Configuration** link, then **Encoder Settings** to open the configuration dialog shown in figure 49 below.

Video Input Configuration				Encoder Configuration			
Input	Auto Img	Aspect Ratio	Film Mode	Resolution	Frame Rate	Stream Mode	Stream Type
1: YUVp/HDTV	Off	Fill	Disable	1280x720	30 fps	Video/Audio	VBR
2: RGB	Off	Fill	Disable				
3: DVI	Off	Fill	Disable				
RTSP Configuration				Closed Captioning	Profile Type	Profile Level	Video Bit Rate
Streaming Method	Multicast IP	MTU	TTL	Enable	Main	4.2	5000 Kbps
Unicast RTP		1500	10	Audio Bit Rate	GOP Length	Audio Delay	
				384 Kbps	30 Frames	0 msec	
Streaming Configuration							
Stream Control	Stream Method	Destination IP	Destination Port	MTU	TTL	QoS (Differentiated Services)	
Enable	Multi TS/RTP	238.13.197.190	60000	1500	10	Normal (CS3)	
SAP Control	Session Name	Session Description	Keywords	Author	Announce Frequency		
Enable	Test Pattern 1	Bars and Tones	test, pattern	Extron1	5 sec		

Figure 49. SME 100 Encoder Configuration Panel (Partial View)

In both the **Stream Control** and **SAP Control** drop-down lists, select **Enable**. Choose a **Destination IP** and **Destination Port** which avoid conflict with other multicast devices on your network, then enter them into the appropriate fields.

With SAP Control enabled, the SME 100 session name (**Test Pattern 1**) is listed in the SMD 101 stream browser page in the Extron folder. To connect the stream, from the browser, drag and drop the stream anywhere on the **Player Controls** panel (see [Player Controls](#) on page 16).

RTSP Multicast (Pull Streaming)

If an SME 100 is configured for RTSP multicast, the SMD 101 must still connect to it using the SME 100 IP address (for example `rtsp://192.168.254.100/extron`) rather than the typical multicast IP address (for example `rtsp://239.10.193.165`).

If the SME 100 is set up for push streaming (**Stream Control Enable**), the RTSP bitrate is limited to 5 Mbps on startup or restart. Although it can be higher, it is not recommended.

If higher bitrates are required, only a single stream method should be active.

Push Streaming (Unicast Port Numbers)

In systems with more than one SME 100 encoder using any of the unicast push methods (TS/UDP, TS/RTP, ES/RTP) to a single SMD 101 decoder, each SME 100 must use a unique port number (such as 60000 and 61000)

Multicast

For systems where streams from one or more SME 100s are received and decoded by multiple SMD 101s, multicast addressing is strongly recommended. All network switches must be suitably rated and correctly configured for IGMP snooping and multicast filtering with an active IGMP querier (possibly the network switch) available on the local subnet for optimum performance.

Connecting to Streams Without SAP Announcements

For a source that is not configured for SAP announcements (such as IP cameras), the RTSP (pull) stream URI is entered directly in the **Source** field of the SMD 101 player controls. The URI prefix (**udp** in the example below) corresponds to the streaming method.

UDP or RTP Connections

To connect the SMD 101 to a stream using the destination port of the encoder, use the following template:

```
udp://@:<destination port>
```

For example, to connect to a SME 100 stream, enter the following URI in the SMD 101 **Source** field (see **Source field** on page 18):

```
udp://@:60000
```

The SMD 101 also supports the URI formats:

```
rtp://192.168.254.254@192.168.254.254:60000
```

and

```
rtp://@192.168.254.254:60000
```

HTTP Connection to an SME 100

To connect SME 100 unicast or multicast push streams over HTTP, use the following templates.

For unicast streams with no password, the URI format is:

```
http://<sme100_ip>/web/output1.sdp.
```

For multicast RTP over UDP RTSP (pull) streams with no credentials set, the URI format is:

```
http://<sme100_ip>/web/multicast.sdp.
```

NOTE: A typical IPv4 address for an SME 100 device on a private network is 192.168.nnn.nnn or 10.nnn.nnn.nnn). A multicast address is in the range 224.nnn.nnn.nnn to 239.nnn.nnn.nnn.

If the encoder has an active admin password, it challenges the connection. An admin or user password is required for connection. To play the stream, the user name and password must be embedded in the URI entered in the **Source** field.

For unicast or multicast PUSH streams with a password, the URI format is:

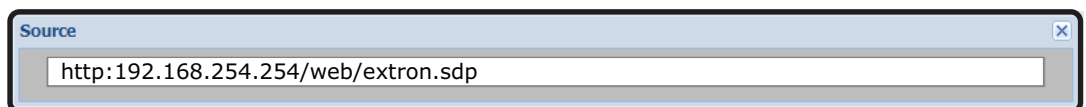
```
http://user:password@<sme100_ip_adr>/web/output1.sdp.
```

For multicast RTP over UDP RTSP (pull) streams with a password, the URI format is:

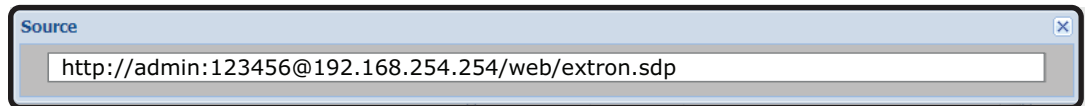
```
http://user:password@<sme100_ip_adr>/web/output1/multicast.sdp.
```

In the following example, connect to a unicast RTSP over UDP stream broadcast from the SME 100 in **figure 49** on page 53, using an admin password “123456”.

1. Locate the HTTP stream in the streams browser (see **Player Page** on page 16).
2. Drag and drop the stream into the player panel. An error message indicates the stream load failed. The URI of the stream is shown in the **Source:** field.
3. Click the ellipsis (...) to open the full file path.



4. Add the SME 100 user name and password.



5. Press <Enter> to load the stream.

The stream loads. If Load Play is active, the stream begins playing. If Load Play is not active, press play (see **Player Controls** on page 16) to play the stream.

Use the templates below to connect the SMD 101 player to SME 100 encoder streams. Substitute the SME 100 IP address for <SME100_IP>.

PULL Streaming:	URL
RTSP Unicast	RTSP://<SME100_IP>/extron
RTSP Multicast	RTSP://<SME100_IP>/extron or HTTP://<SME100_IP>/web/multicast.sdp

Table 1. Pull Stream URLs

PUSH Streaming:		
Unicast		
	TS/UDP	UDP://@:<DESTINATION_PORT>
	TS/RTP	RTP://@:<DESTINATION_PORT>
	ES/RTP	HTTP://<SME100_IP>/web/output1.sdp
Multicast (<DESTINATION_IP> address must be the multicast IP address)		
	TS/UDP	UDP://@<DESTINATION_IP>:<DESTINATION_PORT>
	TS/RTP	RTP://@<DESTINATION_IP>:<DESTINATION_PORT>
	ES/RTP	HTTP://<SME100_IP>/web/output1.sdp

Table 2. Push Stream URLs

NOTES:

- <SME100_IP> is the IP address of the SME 100 encoder.
- UDP and RTP DESTINATION_PORT default is 60000.
- For ES/RTP, SAP is available in "Video only" stream mode.

IR Remote Control

The optional handheld IR remote control provides selection of pre-defined streams and files, and direct control over playback. Features include standard transport controls for play, pause, and stop. Up to 99 pre-configured channels can be directly accessed using the digit buttons.

The following list details the available functions.

POWER — Toggles the SMD 101 power on and off.

CHANNEL — Steps up or down through the channel list from the last selected channel.

VOLUME — Increase and decrease output volume to a display device connected to the SMD 101 (see [Rear Panel Features](#) on page 9).

Digits — Provides direct selection of up to 99 pre-defined channels (see [Lists Panel – Channels tab](#) on page 22).

AV MUTE — Mutes both the outgoing audio and video but allows a stream to continue playback.

INFO — Launches an onscreen display with details of the currently active stream (see [On Screen Display](#) on page 31).

ENTER — After channel entry using direct selection (see [Digits](#), above) the entry is accepted after a short delay. Press **Enter** after the channel entry to change to the channel immediately.

VIDEO MUTE — Mutes and unmutes only the video output.

AUDIO MUTE — Mutes and unmutes only the audio output.

PROGRESS — Provides real-time information of the current playback stream in the on-screen display of a connected display. It includes the total play time of the stream and the current position of playback. The on-screen display duplicates the player controls (see [Progress Bar Panel](#) on page 32).

TRANSPORT CONTROL — Provides remote access of the player controls panel (see [Player Controls](#) on page 16) including:

- **PLAY** — Begins normal playback of the selected stream or file.
- **PREV** — When a playlist is loaded, returns to the previous track.
- **PAUSE** — Pauses the current playback freezing the last decoded frame.
- **NEXT** — When a playlist is loaded, moves to the next track.
- **LOOP** — Places the currently selected clip or playlist into an endless loop.
- **STOP** — Stops the playback of the current source.



Remote Communication and Control

This section describes SIS programming and control of the SMD 101, including:

- [Connection Options](#)
- [LAN \(Ethernet\) Port](#)
- [Host-to-device Communications](#)
- [Command and Response Tables](#)

Connection Options

The SMD 101 Streaming Media Decoder can be remotely connected via a host computer or other device (such as a control system) attached to the rear panel RS-232 port or LAN port, or the front panel USB Config port.

The SMD 101 can be configured and controlled using SIS commands or embedded web pages. SIS commands can be executed using the Extron DataViewer program, found on the Extron website.

RS-232 protocol:

- 9600 baud
- 8 data bits
- no parity
- no flow control
- 1 stop bit

See RS-232 Port below, for additional details on connecting the RS-232 port.

USB port details:

The Extron USB driver must be installed before use (see [Front Panel Configuration Port](#) on page 58).

LAN port defaults:

SMD 101 IP address: 192.168.254.254
Gateway IP address: 0.0.0.0
Subnet mask: 255.255.0.0
DHCP: off

RS-232 Port

The SMD 101 has a serial port that can be connected to a host device such as a computer running a HyperTerminal utility, or the Extron DataViewer utility. The port makes serial control of the player possible. Use the protocol information listed above to make the connection (see [Host-to-device Communications](#) on page 61).

The port can also be configured as pass-through for direct RS-232 control of a connected display using serial commands via the network.

Front Panel Configuration Port

The mini type B USB port is located on the front panel (see [Front Panel Features](#) on page 8). It connects to a host computer for configuration using SIS commands with DataViewer.

To connect the SMD 101 to a host computer:

NOTE: If an Extron USB device has never been connected to the host computer, prior to connecting the SMD 101 config (USB) port for the first time, you must install and activate the USB driver. The simplest way to do this is to install DataViewer (see [DataViewer](#) on page 93) or obtain the driver from the SMD 101 product page at www.extron.com.

1. After the USB driver is loaded, connect a USB A to mini B cable between the Config port on the SMD 101 front panel and a USB port of the PC.
2. If this is the first time an Extron product is connected to the PC, the Found New Hardware Wizard dialog opens. The first screen offers to connect to Windows Update to search the internet for the appropriate driver. This is not necessary if the USB driver is already on your PC (see the Note above).

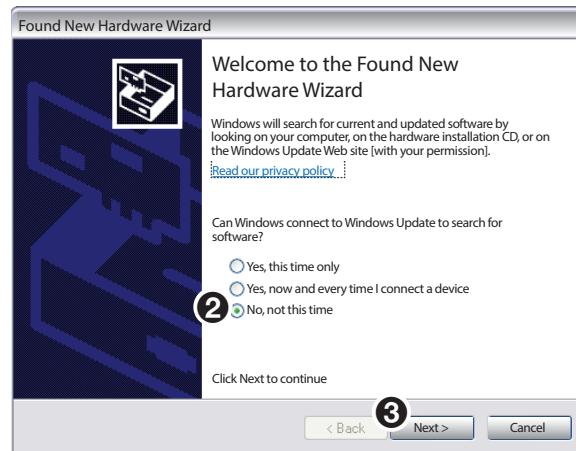


Figure 50. Found New Hardware Wizard

Select **No, not this time** if the driver is already on the PC (see the Note above).

3. Click **Next**.

The following dialog box opens:



Figure 51. Install the Software Automatically

- Select **Install the software automatically (Recommended)**.

NOTE: You do not need to insert an installation disc.

- Click **Next**.

The PC locates the driver and installs it.

- When the Completed dialog opens, click **Finish** to close the wizard.

NOTE: The wizard opens only on the first occasion you connect the SMD 101 to a USB port. The wizard reopens only if you connect the SMD 101 to a different USB port or if you connect a different piece of equipment, requiring a different driver, to the same USB port.

- Configure the SMD 101 as required.

NOTE: There are three SIS commands you may find useful at this point:

- Esc** CI ← returns the current IP address.
- Esc** 1DH ← enables DHCP mode.
- Esc** 2B00T ← restarts the network interface to apply changes.

Use DataViewer (see [DataViewer](#) on page 93) to send the commands and view the results.

LAN (Ethernet) Port

The rear panel LAN connector on the device can be connected to an Ethernet LAN or WAN. Communication between the device and the controlling PC is via Telnet (a TCP socket using port 23). The Telnet port can be changed, if necessary, via SIS or using the SMD 101 user interface. This connection makes SIS control of the device possible using a computer connected to the same LAN or WAN. The SIS commands and behavior of the product are common to the commands and behavior the product exhibits when communicating by serial port or USB.

Ethernet Connection

The Ethernet cable can be terminated as a straight-through cable or a crossover cable and must be properly terminated for your application (see figure 52).

- Crossover cable** — Direct connection between the computer and the SMD 101.
- Patch (straight) cable** — Connection of the SMD 101 to an Ethernet LAN.

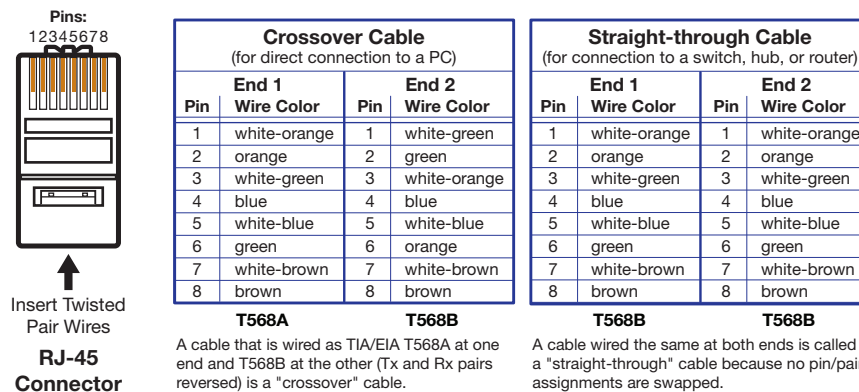


Figure 52. RJ-45 Ethernet Connector Pin Assignments

To Establish a Network Connection to the SMD 101:

1. Open a TCP socket to port 23 using the player IP address.

NOTE: If the local system administrators have not changed the value, the factory-specified default, 192.168.254.254, is the correct value for this field.

2. The SMD 101 responds with a copyright message including the date, the name of the product, firmware version, part number, and the current date/time.
 - a. If the SMD 101 is not password-protected, the device is ready to accept SIS commands immediately after it sends the copyright message.
 - b. If the SMD 101 is password-protected, a `password` prompt appears below the copyright message. Proceed to step 3.
3. If the device is password protected, enter the appropriate administrator or user password.
 - a. If the password is accepted, the device responds with `Login User` or `Login Administrator`.
 - b. If the password is not accepted, the `Password` prompt reappears.

Connection Timeouts

The Ethernet link times out after a designated period of time of no communications. By default, this timeout value is 5 minutes, but the value can be changed.

NOTE: Extron recommends leaving the default timeout at 5 minutes and periodically issuing the `Query (Q)` command to keep the connection active. If there are long idle periods, disconnect the socket and reopen the connection when another command must be sent.

Verbose Mode

Telnet connections can be used to monitor changes that occur, such as SIS commands from other Telnet sockets or a serial port. For a Telnet session to receive change notices, the Telnet session must be in verbose mode 1 or 3. In verbose mode 1 or 3, the Telnet socket reports changes in messages that resemble SIS command responses.

Host-to-device Communications

The commands listed in the following tables perform the same functions, but are encoded differently to accommodate the requirements of each port (Telnet or browser).

SMD 101-initiated Messages

The SMD 101 initiates messages under specific conditions. No response is required from the host. The SMD 101-initiated messages are listed here (underlined).

© Copyright 20nn, Extron Electronics, SMD 101, Vn.nn, 60-nnnn-nn
Day, DD MMM YYYY HH:MM:SS

Vn.nn is the firmware version number.

The SMD 101 sends the boot and copyright messages under the following circumstances:

- If the SMD 101 is off and an RS-232 connection is already set up (the PC is cabled to the SMD 101 and a serial communication program such as HyperTerminal is open), the connected unit sends these messages via RS-232 when first powered on.
- If the SMD 101 is on, it sends the boot and copyright messages when a Telnet connection to the SMD 101 is first opened. The day of the week, date, and time are shown when the SMD 101 is connected via Telnet, but not via RS-232. If using a Telnet connection, the copyright message, date, and time may be followed by a password prompt.

Password Information

The **←Password:** prompt requires a password (administrator level or user level) followed by a carriage return. The prompt is repeated if the correct password is not entered.

If the correct password is entered, the unit responds with **←Login Administrator←** or **←Login User←**, depending on the password entered. If passwords are the same for both administrator and user, the unit will default to administrator privileges.

Using the Command and Response Tables

SIS commands consist of a string (one or more characters per command field). No special characters are required to begin or end a command sequence. When the SMD 101 determines a command is valid, it executes the command and sends a response to the host device. All responses end with a carriage return and a line feed (CR/LF = ←↵), signaling the end of the response character string.


When programming, certain characters are more conveniently represented by their hexadecimal rather than ASCII values. The table below shows the hexadecimal equivalent of each ASCII character:

	ASCII to Hex Conversion Table																Esc 1B	CR 0D	LF 0A
Space →	20	!	21	"	22	#	23	\$	24	%	25	&	26	'	27				
	(28) 29	* 2A	+ 2B	, 2C	- 2D	. 2E	/ 2F	0 30	1 31	2 32	3 33	4 34	5 35	6 36	7 37			
	8 38	9 39	: 3A	; 3B	< 3C	= 3D	> 3E	? 3F	@ 40	A 41	B 42	C 43	D 44	E 45	F 46	G 47			
	H 48	I 49	J 4A	K 4B	L 4C	M 4D	N 4E	O 4F	P 50	Q 51	R 52	S 53	T 54	U 55	V 56	W 57			
	X 58	Y 59	Z 5A	[5B	\ 5C] 5D	^ 5E	_ 5F	` 60	a 61	b 62	c 63	d 64	e 65	f 66	g 67			
	h 68	i 69	j 6A	k 6B	l 6C	m 6D	n 6E	o 6F	p 70	q 71	r 72	s 73	t 74	u 75	v 76	w 77			
	x 78	y 79	z 7A	{ 7B	7C	} 7D	~ 7E	DEL 7F											

Figure 53. ASCII to Hex Conversion Table

The Command and Response tables list valid ASCII (for Telnet or RS-232) command codes, the corresponding URL (uniform resource locator) encoded (for Web browsers) command codes, the SMD 101 responses to the host, and a description of the command function or the results of executing the command.

Symbol definitions

- ↵ = CR/LF (carriage return/line feed) (hex 0D 0A)
- ↵ = Carriage return (no line feed, hex 0D)
(for URL-encoded commands, use the pipe character, |, instead)
- = Space character (%20 for web browser)
- | = Pipe (vertical bar) character
- * = Asterisk character (which is a command character, not a variable)
-  = Escape key (hex 1B)
(use **W** instead of **Esc** for Web browsers)

NOTE: For web encoding only: data is directed to the specified port and must be encoded (URL encoding) if it is non-alphanumeric. Change any non-alphanumeric character (% , +, ↵) within the data section into the corresponding hexadecimal equivalent, %xx, where xx represents the two-character hex byte. For example, a space (hex: 20) is encoded as %20, and a plus sign (hex: 2B) is encoded as %2B.

Error Responses

When the SMD 101 is unable to execute the command, it returns an error response to the host. The error response codes and their descriptions are as follows:

- | | |
|---|--|
| E10 Unrecognized command | E24 Privilege violation |
| E12 Invalid port number | E25 Device is not present |
| E13 Invalid parameter (number is out of range) | E26 Maximum connections exceeded |
| E14 Not valid for this configuration | E28 Bad filename or file not found |
| E17 System timed out | E30 Hardware failure |
| E22 Busy | E31 Attempt to break port pass-through when not set |

Simple Control Port Commands - Telnet and Web-browser Accessible

Upper and lower case text can be used interchangeably except where noted. Port 23 is default for Telnet. Port 80 is default for web browsers. They both can be mapped to different ports.

The following commands are for either a Telnet (port 23) or web browser (port 80) connection. There are minor differences when implementing these commands via Telnet or via URL encoding using a web browser. All commands listed will work using either connection method but due to some limitations of the web browser, the encapsulation characters must be modified to be certain the web browser will properly handle them. All examples are shown in a proper implementation of a Telnet or web browser session.

NOTE: When using web browsers, some non-alpha numeric characters must be represented as their hex equivalent such as %xx where xx equal the two character representation of the hex byte that needs to be sent (a comma ',' would be represented as %2C). Characters such as '%' (percent), '+' (plus) and ' ' (space) should also be encoded in Hex.

Telnet

Escape (Hex 1B)

Carriage Return (Hex 0D)

Web Browser

W [must **not** be encoded]

Pipe Character (|) [must **not** be encoded]

When describing the use of SIS commands via a web browser, the (URL) reference is used to shorten the examples. (URL) would be the full URL of the control interface and web page reference including all path information

(<http://192.168.254.254/mypage.HTML>).

To send commands using a Web browser, prefix them with the full URL followed by ?cmd=<http://192.168.254.254/mypage.html?cmd=WSF>>).

Symbol definitions

- ↵ = CR/LF (carriage return/line feed)
- ← or ; = Carriage return (no line feed, hex 0D)
 - = Space
 - * = Asterisk character (which is a command character, not a variable)
- [Esc] or W = Escape
- [X1] = Port number (two digits, zero padding)
- [X5] = DHCP mode (0=off, 1=on)
- [X11] = Firmware version number
- [X12] = Device name (63 characters, max)
Must comply with internet host name standards. See RFC1123.
- [X13] = Day, date, and time (Day, DDMmmYYYY
HH:MM:SS)
- [X14] = IP address in dotted decimal notation
(xxx.xxx.xxx.xxx)
Default: 192.168.254.254 no padding
- [X15] = Gateway address
Default: 0.0.0.0 no padding
- [X18] = Hardware MAC address
(00-05-A6-NN-NN-NN)
- [X19] = Subnet mask
default: 255.255.255.0 no padding)
- [X22] = Verbose mode
0=off/none (default for telnet connections)
1=verbose mode (default for RS-232 host control)
2=tagged responses for queries
3=verbose mode and tagged responses
- [X25] = RS-232 baud rate (300 to 115200 bps,
default: 9600)
- [X26] = RS-232 parity (default: none)
- [X27] = RS-232 data bits (default: 8)
- [X28] = RS-232 stop bits (default: 1)
- [X33] = Password: maximum length 12
characters. All alpha-numeric characters
permitted except /, \, |, "space", and "*".
- [X36] = HDMI output format:
0=Auto (based on EDID), default
1=DVI
2=HDMI 444 RGB
(0-255, audio, InfoFrames)
3=unused
4=HDMI 444 YUV "Limited"
(16-235, audio, InfoFrames)
5=unused
6=HDMI 422 YUV "Limited"
(16-235, audio, InfoFrames)
- [X50] = RS-232 direct access mode
(0=disabled, 1=host control, 2=direct
access:pass-through)
- [X52] = Security level:
11=network user
12=admin user
- [X69] = Port timeout in seconds (zero padded,
example 00050)
- [X501] = Input number
1 or 2 digit command,
2 digit response (00=all)
- [X510] = 0=Off/disable, 1=On/enable)
- [X512] = Internal temperature
(in degrees Celsius; xx.x)
- [X521] = Video Output Rate
10 = 640x480 @ 50 Hz
11 = 640x480 @ 60 Hz
12 = 800x600 @ 50 Hz
13 = 800x600 @ 60 Hz
14 = 1024x768 @ 50 Hz
15 = 1024x768 @ 60 Hz
16 = 1280x1024 @ 50 Hz
17 = 1280x1024 @ 60 Hz
18 = 1366x768 @ 50 Hz
19 = 1366x768 @ 60 Hz
20 = 1600x1200 @ 50 Hz
21 = 1600x1200 @ 60 Hz
22 = 1920x1200 @ 50 Hz
23 = 1920x1200 @ 60 Hz
24 = 480p @ 59.94 Hz
25 = 480p @ 60 Hz
26 = 576p @ 50 Hz
32 = 720p @ 50 Hz
33 = 720p @ 59.94 Hz
34 = 720p @ 60 Hz (default)
35 = 1080i @ 50 Hz
36 = 1080i @ 59.94 Hz
37 = 1080i @ 60 Hz
38 = 1080p @ 23.98 Hz
39 = 1080p @ 24 Hz
40 = 1080p @ 25 Hz
41 = 1080p @ 29.97 Hz
42 = 1080p @ 30 Hz
43 = 1080p @ 50 Hz
44 = 1080p @ 59.94 Hz
45 = 1080p @ 60 Hz
- [X522] = Test Pattern
(two-digit response, 0 padding)

- 0 = Off (default)
 - 1 = Crop (not currently supported)
 - 2 = Alternating pixels
 - 3 = Alternating lines
 - 4 = Crosshatch (grid)
 - 5 = 4x4 crosshatch (grid)
 - 6 = Color bars
 - 7 = Grayscale
 - 8 = Ramp
 - 9 = White field
- X528** = Onscreen display timeout: 0 to 501 seconds.
0=disabled,
5=default,
501=never time out
(three digit response, 0 padding).
- X539** = Aspect ratio settings
0 = Fit (zoom)
1 = Fill (each input rate automatically fills the entire output raster; default)
2 = Follow (each input rate is displayed in its native aspect ratio)
- X540** = Screen saver mode
0 = Custom color set via DWP
1 = Black screen (default)
2 = Blue with OSD text
- X542** = Video mute
0 = Unmute all (default)
1 = Mute to black
2 = Mute video and sync
- X550** = Audio volume in dB
(0 to -100, 1 dB steps)
-30=default,
-100=mute 1 dB steps)
- X551** = Analog audio format
1=dual mono,
2=stereo (default)
- X552** = Stream mode
0 = Audio and video (default)
1 = Video
- X554** = Source video bit rate in kbps
- X555** = Current source peak video bitrate in kbps
- X559** = Static audio delay in milliseconds
Positive values are 3-digit padded.
Negative values are 2-digit padded 00-99
and 3-digit 100-255.
- X563** = Screen saver status
- 0 = Input active and timer reset
1 = Input inactive, timer running, and output active
2 = Input inactive, timer expired, and output video and sync muted
- X564** = Source audio bit rate (kbps)
- X565** = Source audio sample rate
0 = Reserved
1 = Reserved
2 = 44.1 kHz
3 = 48 kHz
- X569** = Total source bit rate (kbps)
- X576** = Network interface ID
- X585** = System software upgrade operation (UPGS) status
0 = Idle, no upgrade in progress
1 = Done, upgrade completed successfully
2 = Busy, upgrade has started, writes to flash memory not complete
3 = Writing to flash memory
4 = Done, requires reboot to complete upgrade
5 = Failed, due to insufficient flash memory space
6 = Failed, due to corrupted file
7 = Failed, due to product ID mismatch
8 = Failed, other
- X586** = IP address or URI
- X587** = Ping result (IP address*Bytes*TTL*time), returns E13 if URL cannot be resolved or IP*0*0*0*0 if ping times out
- X588** = OSD window number
1=info panel
2=progress bar
- X589** = OSD window position
1=top left, 2=top center, 3=top right,
4=center left, 5=center center, 6=center right, 7=bottom left, 8=bottom center, 9=bottom right
- X590** = OSD window visibility
0=hidden
1=visible
2=toggle
- X591** = Playback channel (always 1 for single channel devices)

- X592** = Player state
 0=stop,
 1=play,
 2=pause
- X593** = Playback speed (1=normal speed)
- X594** = Timecode value HH:MM:SS.DD format
 DD is decimal seconds up to nine digits.
- X596** = File path
- X597** = Channel preset number (1 - 99. Returns - 1
 if current source is not a channel preset.
- X598** = Media Uniform Resource Identifier (URI)
 For clips, "file:/" is optional. Do not
 enclose the URI in quotes even when it
 contains spaces.
- X599** = Name, preset number, and Media URI
Example: {"name": "1280x720p6016x9",
 "preset": 1, "uri": "rtsp://10.13.193.170/
 extron"}
- X600** = Start value (1 - 5120)
- X601** = Count value (1 - 5120)
- X602** = IR input (0=disabled, 1=front panel
 [default], 2=rear panel)
- X603** = PSAV state (0=inactive [default], 1=active)
- X604** = Standby timer value (0 - 500 minutes,
 0=off, default)
- X605** = SNMP contact name text (up to 64
 characters, default="not specified")
- X606** = SNMP location text (up to 64 characters,
 default="not specified")
- X607** = SNMP public password (up to 64
 characters, default="public")
- X608** = SNMP private password (up to 64
 characters, default="private")
- X609** = Time zone location (2-6 letters)
- X610** = Time zone description
 Example: (UCT - 08 : 00) Pacific Time
- X612** = History limit

Command and Response Tables

Basic SIS Commands

Command	ASCII command (host to device)	URL Encoded (web)	Response (device to host)
Information requests			
Firmware version	Q/q	*Q	[X11]↵
Firmware and build version	*Q/q	*Q	[X11]↵
Kernel firmware and build	**Q/q	**Q	[X11]↵
ID messaging version	***Q/q	***Q	[X11]↵
Verbose version info	ØQ/Øq	ØQ	Sum of 2Q-3Q-4Q↵
Firmware version	1Q/1q	1Q	[X11]↵
Bootstrap version	2Q/2q	2Q	[X11]↵
Factory firmware version	3Q/3q	3Q	[X11] plus kernel version, model number, and load date↵
Updated firmware version	4Q/4q	4Q	[X11] plus kernel version, model number, and load date↵
<p>NOTE: An asterisk (*) after the version number indicates the currently running version. Question marks (?.??) indicate that only factory firmware is loaded. A caret (^) indicates the firmware version that should be running, but a Mode 1 reset was executed and the default factory firmware is running. An exclamation point (!) indicates corrupted firmware.</p>			
General Information	I/i		SMD•1Ø1
Query part number	N/n	N	6Ø-13Ø5-Ø1↵
Query model name	I/i	I	SMD•1Ø1↵
Query model description	2I/i	2I	Streaming•Media•Decoder
Query system memory usage	3I	3I	#Bytes used out of #KBytes↵
View system processor usage	11I	11I	Returns a percentage of total.
View system processor idle	12I	12I	Returns a percentage of total.
View ethØ link status	13I	13I	Current link state, speed, and mode.
View telnet connections	[Esc]CC↵	n↵	n=number of active IP connections.
Set verbose mode	[Esc] [X22]CV↵	Vrb[X22]↵	
View verbose mode	[Esc]CV↵	[X22]↵	

NOTES: [X11] = Version number

[X22] = Verbose/Response mode

Firmware version number to second decimal place (x.xx)
 Version and Build number adds four digits (x.xx.xxxx) to the Version number
 Ø=clear/none (default for telnet connections)
 1=verbose mode (default for RS-232 host control)
 2=tagged responses for queries
 3=verbose mode and tagged responses for queries

NOTE: If tagged responses is enabled, all read commands return the data, the same as setting the value does (Example: command: [Esc]CV↵ Response: Vrb3↵).

Command and Response Table for Basic SIS Commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
System Commands			
Configuration			
Reboot system	Esc 1B00T←	Boot1↵	Complete system reboot.
Save box configuration	Esc 1*{config type}XF←	Cfg1*{config type}↵	Save the current configuration
Restore box configuration	Esc 0*{config type}XF←	Cfg0*{config type}↵	Load a configuration file.
IR Control			
Set IR input	Esc X602 IREN←	IrenX602↵	Set the active IR port.
View IR input	Esc IREN←	X602↵	View the current active IR port.
Power Save and Standby			
Set the power save mode	Esc X603 PSAV←	PsavX603↵	
View the power save mode	Esc PSAV←	X603↵	
Set standby timer	Esc X604 PTIM←	PtimX604↵	
View timer standby	Esc PTIM←	X604↵	
Internal temperature	Esc 20STAT←	X512↵	Temperature in Celsius.
Resets			
Reset flash	Esc ZFFF←	Zpf↵	Reset flash memory (erase user-supplied files).
System Reset (factory defaults)	Esc ZXXX←	Zpx↵	Resets device to default.
Reset all device settings and delete files	Esc ZY←	Zpy↵	Reset to default except IP address, delete all user files.
<p>NOTE: This reset excludes IP settings such as IP address, subnet mask, gateway IP address, unit name, DHCP setting and port mapping (telnet/web/direct access) in order to preserve communication with the device. This reset is recommended after a firmware update.</p>			
Absolute reset	Esc ZQQQ←	Zpq↵	System Reset , plus returns the IP address and subnet mask to defaults.
Firmware Update			
Execute FW/SW update	Esc FW,<filename>UPGS←	Upgs•FW,<filename> *X585↵	
Query FW update progress	Esc FWUPGS←	Upgs X585	
Reset all non-busy updates to idle	Esc idleUPGS←	Upgs X585	

NOTES: X512 = Temperature Internal temperature in degrees Celsius.
X585 = System software upgrade operation (UPGS) status (see the [UPGS table](#) on page 65)
X602 = IR Input 0 = disabled
1 = front (default)
2 = rear panel
X603 = PSAV state 0 = inactive (default)
1 = active
X604 = Standby timer 0 to 500 minutes
0 = off (default)

Command and Response Table for Basic SIS Commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Port Assignment			
NOTES:			
<ul style="list-style-type: none"> • Duplicate port# assignments are not permitted (for example, the telnet and web port assignment cannot be the same) and will return the E13 error. • Remapping of port# assignments must be to ports 1024 or higher (unless resetting to the default port number or disabling the port by setting it to 0). 			
Telnet port			
Set telnet port map	Esc [port#]MT ←	Pmt[port#]↵	Set the telnet port.
Reset telnet port map	Esc 23MT ←	Pmt00023↵	Reset the telnet port to the default value (23).
Disable telnet port	Esc 0MT ←	Pmt00000↵	Disable the telnet port.
View telnet port map	Esc MT ←	[port#]↵	View the currently set telnet port.
Web port			
Set web port map	Esc [port#]MH ←	Pmh[port#]↵	Set the web port.
Reset web port map	Esc 80MH ←	Pmh00080↵	Reset the web port to the default value (80).
Disable web port	Esc 0MH ←	Pmh00000↵	Disable the web port.
View web port map	Esc MH ←	[port#]↵	View the currently set web port.
SNMP port			
Set SNMP port map	Esc A[port#]PMAP ←	PmapA[port#]↵	Set the SNMP port.
Reset SNMP port map	Esc A 161PMAP ←	PmapA00161↵	Reset the SNMP port to the default value (161).
Disable SNMP port	Esc A 0PMAP ←	PmapA00000↵	Disable the SNMP port.
View SNMP port map	Esc A PMAP ←	[port#]↵	View the currently set SNMP port.
SSH port			
Set SSH port map	Esc B[port#]PMAP ←	PmapB[port#]↵	Set the SSH port.
Reset SSH port map	Esc B 22023PMAP ←	PmapB22023↵	Reset the SSH port to the default value (22023).
Disable SSH port	Esc B 0PMAP ←	PmapB00000↵	Disable the SSH port.
View SSH port map	Esc B PMAP ←	[port#]↵	View the currently set SSH port.
SSL port			
Set SSL port map	Esc S[port#]PMAP ←	PmapS[port#]↵	Set the SSL port.
Reset SSL port map	Esc S 443PMAP ←	PmapS00443↵	Reset the SSL port to the default value (443).
Disable SSL port	Esc S 0PMAP ←	PmapS00000↵	Disable the SSL port.
View SSL port map	Esc S PMAP ←	[port#]↵	View the currently set SSL port.

Command and Response Table for Basic SIS Commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Direct access port			
Set direct access port map	Esc [port#]MD ←	Pmd [port#] ←↵	Set serial pass-through port number.
Reset direct access port map	Esc 2001MD ←	Pmd 2001 ←↵	Reset serial pass-through port.
Disable direct access port	Esc 0MD ←	Pmd 00000 ←↵	Disable serial pass-through port.
View direct access port map	Esc MD ←	[port#] ←↵	View serial pass-through port.
Restart network			
Restart network	Esc 2BOOT ←	2BOOT ←↵	
<p>NOTE: Changes made to the IP address, subnet mask, HDCP, host name, and gateway address do not take effect on Linux systems until the 2BOOT command is issued. Changes made using the CISG command take place immediately.</p>			

Command and Response Table for Basic SIS Commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
IP Setup Commands			
Set unit name	Esc X12 CN ←	Ipn • X12 ↵	Set the name of the unit.
Set unit name to factory default	Esc • CN ←	Ipn • X12 ↵	Sets the name of the unit to the factory default.
View unit name	Esc CN ←	X12 ↵	View the name of the unit.
Set date/time	Esc MM/DD/YY - HH:MM:SS CT ←	Ipt • X13 ↵	Set the date and time.
View date/time	Esc CT ←	X13 ↵	View the date and time.
Set time zone	Esc X609 * TZON ←	Tzon X609 * X610 ↵	
View time zone	Esc TZON ←	Tzon X609 * X610 ↵	
View all time zones	Esc * TZON ←	Tzon X609 * X610 ↵...	Repeats for all time zones.
Set DHCP on	Esc 1DH ←	Idh1 ↵	Sets DHCP to on.
Set DHCP off	Esc ØDH ←	IdhØ ↵	Sets DHCP to off.
View DHCP mode	Esc DH ←	X5 ↵	View the DHCP mode setting.
Set IP address	Esc X14 CI ←	Ipi • X14 ↵	Set the IP address of the unit.
View IP address	Esc CI ←	X14 ↵	View the IP address of the unit.
View hardware MAC address	Esc CH ←	X18 ↵	View the hardware MAC address of the unit.
		In verbose mode: Iph • X18 ↵	
Set subnet mask	Esc X19 CS ←	Ips • X19 ↵	Set the subnet mask of the unit.
View subnet mask	Esc CS ←	X19 ↵	View the subnet mask of the unit.
Set gateway IP address	Esc X15 CG ←	Ipg • X15 ↵	Set the gateway IP address.
View gateway IP address	Esc CG ←	X15 ↵	View the gateway IP address.

NOTES:

X5 = DHCP mode
X12 = Unit/Device/Network Host Name

X13 = Day, date, and time
X14 = IP address (xxx.xxx.xxx.xxx)

X15 = Gateway address
X18 = Hardware MAC address

X19 = Subnet mask
X609 = Time zone location

X610 = Time zone description

Ø = Off, 1 = On
63 characters, maximum. Must comply with internet host name standards. See RFC1123.
Format: Day, DD Mmm YYYY HH:MM:SS
Default IP address = 192.168.254.254
Default gateway IP address = Ø.Ø.Ø.Ø
ØØ-Ø5-A6-xx-xx-xx
Default subnet mask = 255.255.Ø.Ø
2-6 letters (typically 3)
Example: (UTC-Ø8:ØØ) Pacific Time

Command and Response Table for Basic SIS Commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Set DNS server IP address	Esc X14 DI ←	Ip d • X14 ↵	Set the DNS server IP address.
View DNS server IP address	Esc DI ←	X14 ↵	View the DNS server IP address.
Set IP address, subnet mask, gateway	Esc X576 * X14 * X19 * X15 CISG ←	Cisg1*IP/subnet bits*gateway ↵	
View IP address, subnet mask, gateway	Esc X576 CISG ←	IP/subnet bits*gateway ↵	
Ping a remote IP address	Esc X586 PING ←	X587 ↵	
Set global IP port timeout	Esc 1 * X69 TC ←	Pti 0 * X69 ↵	
View global IP port timeout	Esc 1 TC ←	X69 ↵	
RS-232 Port			
Set RS-232 port mode	Esc X1 * X50 HSTM ←	Hstm X1 * X50 ↵	
View RS-232 port mode	Esc X1 HSTM ←	X50 ↵	
Configure serial port parameters	Esc X1 * X25 , X26 , X27 , X28 CP ←	Cpn X1 • Ccp X25 , X26 , X27 , X28 ↵	
Reset serial port	Esc X1 * 9600, n, 8, 1 CP ←	Cpn X1 • Ccp X25 , X26 , X27 , X28 ↵	
View serial port settings	Esc X1 CP ←	X25 , X26 , X27 , X28 ↵	
Set current port timeout	Esc 0 * X69 TC ←	Pti 0 * X69 ↵	
View current port timeout	Esc 0 TC ←	X69 ↵	

NOTES:

X1 = Port number	Two digits, zero padding
X14 = IP address (xxx.xxx.xxx.xxx)	Default IP address = 192.168.254.254
X15 = Gateway address	Default gateway IP address = 0.0.0.0
X19 = Subnet mask	Default subnet mask = 255.255.0.0
X25 = RS-232 baud rate	300 to 115200 bps, default: 9600
X26 = RS-232 parity	Default: none
X27 = RS-232 data bits	Default: 8
X28 = RS-232 stop bits	Default: 1
X50 = RS-232 direct access mode	0=disabled, 1=host control, 2=direct access:pass-through
X69 = Port timeout in seconds	zero padding, example: 000050
X576 = Network interface ID	First NIC=1
X586 = IP address or URI	
X587 = Ping result	IP address*Bytes*TTL*time (in mS)

Command and Response Table for Basic SIS Commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
SNMP (Simple Network Management Protocol)			
SNMP unit contact			
Set unit contact	[Esc] C [x605] SNMP ←	Snmp C* [x605] ↵	Sets the unit contact to [x605].
Set unit contact to default	[Esc] C •SNMP ←	Snmp C*Not•Specified ↵	Sets the unit contact to the default setting.
View unit contact	[Esc] C SNMP ←	[x605] ↵	View the unit contact.
SNMP unit location			
Set unit location	[Esc] L [x606] SNMP ←	Snmp L* [x606] ↵	Sets the unit location to [x606].
Set unit location to default	[Esc] L •SNMP ←	Snmp L*Not•Specified ↵	Sets the unit location to the default setting.
View unit location	[Esc] L SNMP ←	[x606] ↵	View the unit location.
SNMP passwords			
Set public password	[Esc] P [x607] SNMP ←	Snmp P* [x607] ↵	Sets public password to [x607].
Set public password to default	[Esc] P •SNMP ←	Snmp P*public ↵	Sets community password to the default.
View public password	[Esc] P SNMP ←	[x607] ↵	View the public password.
Set private password	[Esc] X [x608] SNMP ←	Snmp X* [x608] ↵	Sets private password to [x608].
Set private password to default	[Esc] X •SNMP ←	Snmp X*private ↵	Sets private password to the default setting.
View private password	[Esc] X SNMP ←	[x608] ↵	View the private password.
SNMP access enable			
Enable SNMP access	[Esc] E 1 SNMP ←	Snmp E* 1 ↵	Enable SNMP access.
Disable SNMP access	[Esc] E 0 SNMP ←	Snmp E* 0 ↵	Disable SNMP access.
View SNMP state	[Esc] E SNMP ←	[x510] ↵	View the SNMP access setting.

NOTES:

[x510] = 0 = Off or disable
1 = On or enable

[x605] = SNMP contact name text, up to 64 characters (default="not specified")

[x606] = SNMP location, up to 64 characters (default="not specified")

[x607] = SNMP public password, up to 64 characters (default="public")

[x608] = SNMP private password, up to 64 characters (default="private")

Player SIS Commands

Command	ASCII command (host to device)	Response (device to host)	Additional description
Password and Security Settings			
Set administrator password	Esc X33CA ←	Ipa•X33←	X33 = Up to 12 alpha-numeric characters.
View administrator password	Esc CA ←	Ipa*****←	
Reset (clear) administrator password	Esc •CA ←	Ipa•←	
Set user password	Esc X33CU ←	Ipu•X33←	X33 = Up to 12 alpha-numeric characters.
View user password	Esc CU ←	Ipu*****←	
Reset (clear) user password	Esc •CU ←	Ipu•←	
View session security level	Esc CK ←	X52←	X52 = Security level of connection 11=user, 12=administrator.
File Commands			
View disk free space	15I	M*N*O←	Local storage details: M=Block size (Bytes) N=Free Inodes (returns -1 if unlimited) O=Free blocks
Change/create directory	Esc path/directory/CJ ←	Dir1 path/directory/←	filename/date/time/length
Return to root directory	Esc /CJ ←	Dir1/←	filename/date/time/length
Up one directory	Esc ../CJ ←	Dir1 path/directory/←	
View current directory	Esc CJ ←	path/directory/←	space remaining/bytes left
Erase user-supplied file	Esc filenameEF ←	Del•path/filename←	
Erase current directory and included files	Esc /EF ←	Dd1←	Also deletes files inside directory
Erase current directory and sub-directories	Esc //EF ←	Dd1←	
List files from current directory	Esc DF ←	filename•date/time•length← space_remaining•Bytes Left←	
List files from current directory and below	Esc LF ←	path/filename•date/time•length← path/filename•date/time•length← path/filename•date/time•length← ... space_remaining•Bytes Left←	
NOTE: LF has same response from unit as DF command, except path / directory precedes filenames for files from directories below the current directory.			
Load file to user flash memory	Esc +UFfilesize, filename ← (followed by raw file data using binary mode, if necessary)	Up1←	If there is insufficient space to store the file, response is Fld?.
Load file to user flash and set specific time and date	Esc +UFfilesize*•<day>•<month>•<day>•<year>•<hour>•<minute>•<second>, filename ← (followed by raw file data using binary mode, if necessary)	Up1←	If there is insufficient space to store the file, response is Fld?.
Retrieve file from user flash memory	Esc filenameSF ←		Response is 4 bytes of file size plus the raw unprocessed data in the file.

Command and Response Table for Player SIS Commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Input Configuration			
Input video aspect ratio (changes take effect after the next playback start)			
Set to zoom (fit)	[Esc] [X501] *ØASPR←	Aspr [X501] *ØØ←	Sets input [X501] to zoom.
Set to fill	[Esc] [X501] *1ASPR←	Aspr [X501] *Ø1←	
Set to follow	[Esc] [X501] *2ASPR←	Aspr [X501] *Ø2←	
Set aspect setting	[Esc] [X501] * [X539] ASPR←	Aspr [X501] * [X539] ←	
View aspect setting	[Esc] [X501] ASPR←	[X539] ←	View video format of input [X501] .
Audio			
Set static audio delay	[Esc] S [X559] ADLY←	AdlyS [X559] ←	
View static audio delay	[Esc] SADLY←	[X559] ←	
Streaming			
Current source peak video bit rate	[Esc] MBITR←	[X555] ←	Bitrate in kbps.
Current source audio bit rate	[Esc] ABITR←	[X564] ←	Bitrate in kbps.
Current source audio sample rate	[Esc] AUSR←	[X565] ←	Bitrate in kbps.
Current source video bit rate	[Esc] VBITR←	[X554] ←	Bitrate in kbps.
Current source total bit rate	[Esc] SBITR←	[X569] ←	Bitrate in kbps.
Current source stream mode	[Esc] SMOD←	[X552] ←	0=audio and video 1=video only

NOTES:

[X501] = Input number	Ø=A11 (one or two digit command, two digit response)
[X539] = Aspect ratio settings	Ø=Fit (zoom) 1=Fill 2=Follow
[X552] = Stream mode	Ø=Audio and Video (default) 1=Video only
[X554] = Source video rate (kbps)	
[X555] = Current source peak video rate (kbps)	
[X559] = Static audio delay	Positive values are 3-digit padded. Negative values are 2-digit padded ØØ to 99 and 3-digit 1ØØ to 255.
[X564] = Source audio bitrate (kbps)	
[X565] = Source audio sample rate	Ø=reserved 1=reserved 2=44.1 kHz 3=48 kHz
[X569] = Total source bitrate (kbps)	

Command and Response Table for Player SIS Commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Playback			
Start playback	[Esc] S [X591]* [X593] PLYR ←	PlyrS [X591]* [X593] ←	Play channel [X591] at speed [X593].
Pause playback	[Esc] E [X591] PLYR ←	PlyrE [X591]* [X593] ←	Pause channel [X591].
Stop playback	[Esc] O [X591] PLYR ←	PlyrO [X591] ←	Stop channel [X591].
View playback state	[Esc] Y [X591] PLYR ←	PlyrY [X591]* [X592] ←	
View current timecode	[Esc] K [X591] PLYR ←	PlyrK [X591]* [X594] ←	[X594]=timecode in HH:MM:SS.DD format.
Load playlist	[Esc] L [X591]* [X596] PLYR ←	PlyrL [X591]* [X596] ←	Set playlist path and filename.
View current playlist	[Esc] L [X591] PLYR ←	PlyrL [X591]* [X596] ←	
Load media item path	[Esc] U [X591]* [X596] PLYR ←	PlyrU [X591]* [X596] ←	
View current media path	[Esc] U [X591] PLYR ←	PlyrU [X591]* [X596] ←	

NOTES: [X591] = Playback channel Always 1 for single channel devices
[X592] = Player State 0=stop
1=play
2=pause
[X593] = Playback Speed 1=Normal speed
[X594] = Timecode HH:MM:SS.DD where DD is decimal seconds up to nine-digits
[X596] = File path

Command and Response Table for Player SIS Commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
User Presets			
View all presets	[Esc] GTVPR←	[{...},...]	Get all presets and channel list.
Save URI to preset	[Esc] U [X597] * [X598] TVPR←	TvprU [X597] * [X599] ↵	Set channel in URL.
Save current URI to preset	[Esc] S [X591] * [X597] TVPR←	TvprS [X591] * [X597] ↵	Set URI to channel.
View current preset	T	[X597] ↵	
Select channel by preset	[X597] T	TvprR [X591] * [X597] ↵	Load channel N.
View current preset	[Esc] T [X591] TVPR←	[X597] ↵	View currently loaded preset.
Next preset	+T	TvprT [X591] * [X597] ↵	Channel up (short).
Next preset	[Esc] T [X591] +TVPR←	TvprT [X591] * [X597] ↵	Channel up (long).
Previous preset	-T	TvprT [X591] * [X597] ↵	Channel down (short).
Previous preset	[Esc] T [X591] -TVPR←	TvprT [X591] * [X597] ↵	Channel down (long).
Select channel by preset	[Esc] T [X591] * [X597] TVPR←	TvprT [X591] * [X597] ↵	Alternate channel control.
Delete preset	[Esc] X [X597] TVPR←	TvprX [X597] ↵	Delete channel preset.
Delete all presets	[Esc] X*ØTVPR←	TvprX↵	Delete all channel presets.
Favorites			
Get all favorites	[Esc] GFAVS←	[{"uri":"uri1", "uuid":"uuid1"},...]	Get favorite list (top level).
Add URI to favorites	[Esc] A [X598] FAVS←	FavsA [X598] ↵	Set selected item URI.
Save specific channel URI as favorite	[Esc] S [X591] FAVS←	FavsS [X591] * [X598] ↵	
Save current channel URI as favorite (short version)	[Esc] SFAVS←	FavsS [X591] * [X598] ↵	Save current URI as favorite (short version).
Delete favorite	[Esc] X [X598] FAVS←	FavsX [X598] ↵	Delete selected item.
Delete all favorites	[Esc] X*ØFAVS←	FavsX↵	Clear favorite list.

NOTES: **[X591]** = Player channel Always 1 for single channel devices
[X597] = Channel number 1 to 99
[X598] = Media URI Uniform Resource Identifier. The prefix "file://" is optional.
[X599] = Name, preset number, and Media URI
Example: {"name":"1280x720p6016x9","preset":1,"uri":"rtsp://10.13.193.170/extron"}

Command and Response Table for Player SIS Commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
History			
Get history, all	[Esc]GHIST ←	[{"id":nnn,"date":"YYYY-MM-DDTHH:MM:SS", "uri":"filename"}]←	(Repeats for all entries).
Get history, start	[Esc]G[X600]HIST ←	[{"id":nnn,"date":"YYYY-MM-DDTHH:MM:SS", "uri":"filename"}]←	Get history from start point [X600] . Does not use or reset event ID. (Repeats for all entries).
Get history, range	[Esc]G[X600]*[X601]HIST ←	[{"id":nnn,"date":"YYYY-MM-DDTHH:MM:SS", "uri":"filename"}]←	Get [X601] entries prior to [X600] . (Repeats for all entries).
Delete history, range	[Esc]X[X600]*[X601]HIST ←	HistX[X600]*[X601]←	Delete [X601] entries prior to [X600] . Does not use, reorder, or reset event IDs.
Export history to file	[Esc]E[X596]HIST ←	HistE←	
Delete history, all	[Esc]X*ØHIST ←	HistX←	
Delete history, start	[Esc]X[X600]HIST ←	HistX[X600]←	Delete history prior to [X600] . Does not use or reset event ID.
Set history limit	[Esc]L[X601]HIST ←	HistL[X601]←	
Get history limit	[Esc]LHIST ←	[X612]←	

NOTES: **[X596]** = File path
[X600] = Start value 1-512Ø
[X601] = Count value 1-512Ø
[X612] = History limit 1-512Ø

Command and Response Table for Player SIS Commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
OSD			
Set OSD window timeout	Esc D X588 * X528 WNDW←	WndwD X588 * X528 ↵	Set OSD info or panel bar X588 timeout to X528 .
View OSD window timeout	Esc D X588 WNDW←	X528 ↵	
Set OSD window location	Esc L X588 * X589 WNDW←	WndwL X588 * X589 ↵	Set the OSD position of window X588 to X589 .
View OSD window location	Esc L X588 WNDW←	X589 ↵	View the OSD position X589 of window X588 .
Set OSD window visibility	Esc V X588 * X590 WNDW←	WndwV X588 * X590 ↵	Set the OSD visibility of window X588 to X590 .
View OSD window visibility	Esc V X588 WNDW←	Wndw X590 ↵	View the OSD visibility setting of window X590 .
Screen Saver			
Set timeout duration	Esc T X528 SSAV←	SsavT X528 ↵	Sets the screen saver timeout to X528 .
View timeout duration	Esc TSSAV←	X528 ↵	
Set screen saver mode	Esc M X540 SSAV←	SsavM X540 ↵	Sets the screen saver mode to X540 .
View screen saver mode	Esc MSSAV←	X540 ↵	
View status	Esc SSSAV←	X563 ↵	

NOTES:

X528 = Onscreen display timeout	∅ to 5∅1 seconds. ∅=disabled, 5=default, 5∅1=never time out. (3-digit response, ∅ padding)
X540 = Screen saver mode	∅=Custom color set via DWP 1=Black screen (default) 2=Blue screen with OSD text
X563 = Screen saver status	∅=Input active and timer reset 1=Input active, timer running and output active 2=Input active, timer expired and output video and sync muted
X588 = OSD window number	1=Info panel 2=Progress bar
X589 = OSD window position	1=top left 2=top center 3=top right 4=center left 5=center center 6=center right 7=bottom left 8=bottom center 9=bottom right
X590 = OSD window visibility	∅=Hidden 1=Visible 2=Toggle

Command and Response Table for Player SIS Commands (continued)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Outputs			
Video			
Set video output format	Esc X36 VTPO ←	Vtpo X36 ←	
View video output format	Esc VTPO ←	X36 ←	
View output rate	Esc RATE ←	X521 ←	
Set output rate	Esc X521 RATE ←	Rate X521 ←	
Mute all outputs to black	1B	Vmt1 ←	
Mute all sync and video	2B	Vmt2 ←	
Unmute all outputs	ØB	VmtØ ←	
View	B	X542	
Test pattern			
Select test pattern	Esc X522 TEST ←	Test X522 ←	Set the test pattern to X522 .
View	Esc TEST ←	X522 ←	View the current test pattern.
Audio			
Set dual mono	Esc o1AFMT ←	Afmto1 ←	
Set stereo	Esc o2AFMT ←	Afmto2 ←	
View audio output format	Esc oAFMT ←	X551 ←	
Set volume	X550 V ←	Vol X550 ←	Set analog volume to X550 .
Increment volume	+V ←	Vol X550 ←	Increment analog audio volume up by 1 dB.
Decrement volume	-V ←	Vol X550 ←	Decrement analog audio volume down by 1 dB.
View volume	V ←	X550 ←	View the analog output volume.
Mute on	1Z	Amt1 ←	Mutes selected audio channel.
Mute off	ØZ	AmtØ ←	Unmutes selected audio channel.
View audio mute status	Z	X510 ←	Ø=Mute off 1=Mute on.

NOTES:

X36 = HDMI output format

X510 = Enable or disable

X521 = Video output rate

X522 = Test pattern

X542 = Video mute

X550 = Audio volume

X551 = Analog audio format

See HDMI output format table on page 64.

Ø=Mute off/disabled

1=Mute on/enabled

See video output rate table on page 64.

See test pattern selection table on page 65.

Ø=Unmute all

1=Mute to black

2=Mute video and sync

Ø to -1ØØ dB in 1 dB steps

-3Ø=default

-1ØØ=mute

1=Dual mono

2=Stereo (default)

Reference Information

This section provides information about:

- [Parts and Accessories](#)
- [Mounting the SMD 101](#)
- [SMD 101 Reset Summary](#)
- [Optimum Network Share Performance](#)
- [Configuring Windows 7 for Network File Sharing](#)
- [Copying Config Files Using Internet Explorer](#)
- [DataViewer](#)
- [Glossary](#)

Parts and Accessories

Several parts and accessories are available for the SMD 101 including:

- IR Remote Control
- Wired IR sensor kit
- Multiple outlet power supply
- False plates to fill out rack space
- Mounting kits to install the SMD 101 in a variety of locations.

See the product page at www.extron.com for part numbers and descriptions.

Mounting the SMD 101

The 1-inch high, half rack width, 6-inch deep SMD 101 Streaming Media Decoder can be:

- Set on a table,
- Mounted on a rack shelf,
- Mounted under a desk or tabletop, or
- Mounted on a projector bracket.

See the SMD 101 product page at www.extron.com for compatible mounting kits.

Tabletop Use

The SMD 101 includes rubber feet (not installed). For tabletop use, attach a self-adhesive rubber foot to each corner on the bottom of the unit.

Rack Mounting

For optional rack mounting, do not install the rubber feet. Mount the SMD 101 on a 19 inch universal or basic rack shelf. Follow the instructions included with the rack mount kit to install the SMD 101.

UL Rack Mounting Guidelines

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the SMD 101 in a rack.

- 1. Elevated operating ambient temperature** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment can be greater than room ambient temperature. Therefore, install the unit in an environment compatible with the maximum ambient temperature ($T_{ma} = +122\text{ }^{\circ}\text{F}$, $+50\text{ }^{\circ}\text{C}$) specified by Extron.
- 2. Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not compromised.
- 3. Mechanical loading** — Mount the equipment in the rack so that a hazardous condition is not achieved due to uneven mechanical loading.
- 4. Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- 5. Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Furniture Mounting

Furniture mount the SMD 101 using an optional under-desk or through-desk mounting kit. Follow the instructions included with the mounting kit.

Table or Wall Mounting

Extron table or wall mounting brackets extend approximately 1/4 inch (6.4 mm) above the top surface of the SMD 101 enclosure. This design allows for an air space between the mounting surface and the enclosure. Follow the instructions included with the mounting kit.

SMD 101 Reset Summary

The SMD 101 can be reset to default states using the rear panel reset button, the **Reset Device** page of the user interface, and SIS commands. Each reset affects different configurations and local files, resetting some to factory condition and retaining others.

The reset mode summary table below details the activation, results, and purpose of each rear panel activated reset mode.

SMD 101 Reset Mode Summary				
	Mode	Activation	Result	Purpose and Notes
Factory Firmware	1	Hold in the recessed rear panel reset button while applying power to the unit.	The SMD 101 reverts to the factory default firmware for a single power cycle.	If incompatibility issues arise with user-loaded firmware, use mode 1 to revert to the factory default firmware for a single power cycle. All user files and settings are maintained.
Reset All IP Settings	4	Hold in the Reset button for about 6 seconds until the Power LED blinks twice (once at 3 seconds, again at 6 seconds). Then, release and press Reset again within 1 second*.	Mode 4: <ul style="list-style-type: none"> • Sets port mapping back to factory default. • Sets the IP address back to factory default (192.168.254.254). • Sets the subnet mask address back to the factory default (255.255.0.0). • Sets the gateway IP address to the factory default (0.0.0.0). • Turns DHCP off. • The Reset LED on the rear panel of the unit flashes four times in succession. 	Mode 4 is used to set IP address information using ARP and the MAC address. "Resetting IP Settings" appears on a connected display.
Reset to Factory Defaults	5	Hold in the Reset button for about 9 seconds until the Power LED blinks three times (once at 3 seconds, again at 6 seconds, again at 9 seconds). Then, release and press Reset again within 1 second*.	Mode 5: Performs a complete reset to factory defaults (except the firmware). <ul style="list-style-type: none"> • Does everything mode 4 does. • Clears port configurations. • Resets all IP options. • Clears all user settings. • Clears all files from the unit. • The Reset LED on the rear panel of the unit flashes four times in succession. 	Mode 5 is useful when wanting to start over with configuration and uploading, and also to replace events. "Resetting SMD 101" appears on a connected display.
NOTE: * = For modes 4 and 5, nothing happens if the momentary press does not occur within 1 second.				

The web-based user interface explains what is retained by each reset. The following table outlines configuration settings and files affected by the SIS command and rear panel resets.

In general, configuration settings and files can be:

- Retained (not affected by the reset).
- Reset to factory (the original factory firmware replaces the current).
- Erased (the configuration settings or files are deleted).

	Device Reset From:								
	SIS Command	Rear Panel	Web-based User Interface	Firmware	User File System	Network Shares	Device Config	Passwords	IP Settings
Factory Firmware (one power cycle)	n/a	Mode 1 (see note, below)	n/a	Factory	Retained	Retained	Retained	Retained	Retained
Network (IP settings) reset	n/a	Mode 4	n/a	Retained	Retained	Reset	Retained	Retained	Reset
Flash Reset	Esc ZFFF←	n/a	n/a	Retained	Erased	Retained	Retained	Retained	Retained
System reset (Factory defaults). User files and settings Retained.	Esc ZXXX←	n/a	Reset device settings to default, but retain user files and all IP settings	Retained	Retained	Reset	Reset	Retained	Retained
Reset device settings and delete user files. Retain IP settings.	Esc ZY←	n/a	Reset device settings to default, delete user files, retain IP settings	Retained	Erased	Reset	Reset	Reset	Retained
Absolute Reset: settings, files, and IP settings.	Esc ZQQQ←	Mode 5	Reset device settings, delete internal user files, and Reset all IP settings	Retained	Erased	Reset	Reset	Reset	Reset

NOTE: A browser refresh is required to see results of a reset.

Optimum Network Share Performance

For optimum performance, the PC used for network file sharing should be a dedicated server. In smaller systems using a desktop PC, the computer must be configured for the task. You may need to allocate additional resources on the PC by setting the following registry key to 3:

```
HKLM\SYSTEM\CurrentControlSet\Services\LanmanServer\Parameters\Size.
```

Image quality and playback can be compromised when files are uploaded to the player during active playback.

Network Shares Dialog

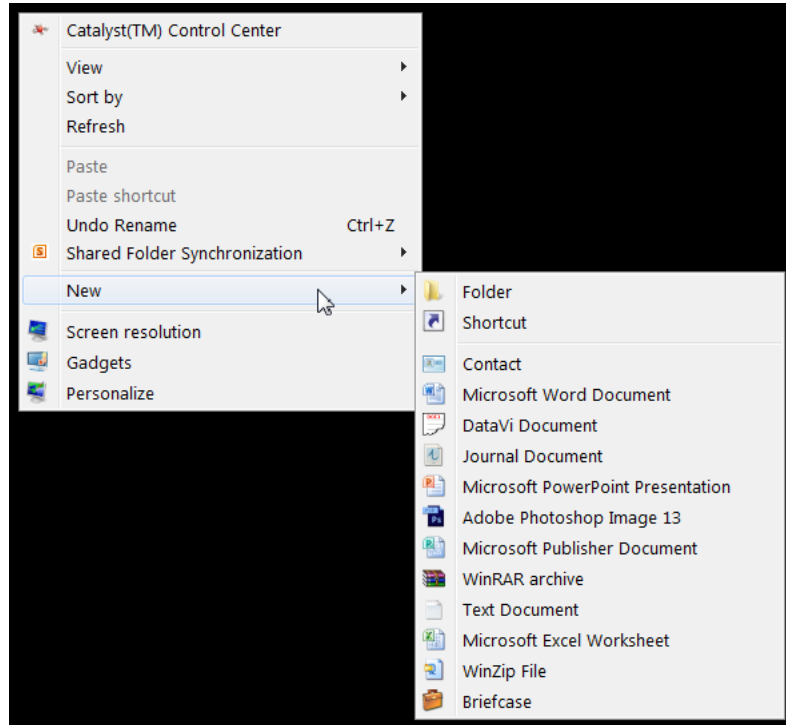
The SMD 101 network shared folder dialog provides options for flexibility within the SMB/CIFS protocol (see [Play Video from a Network Share](#) on page 51). You can add a credentials file, change the port mapping, configure security related features, and add security mode settings. Other options provide the ability to set the read/write mode, filename character remapping, and control over filename case sensitivity. The options field is not normally required. If the network connection fails, or you cannot access a server folder, contact your network administrator to determine if these options are necessary for your network.

Configuring Windows 7 for Network File Sharing

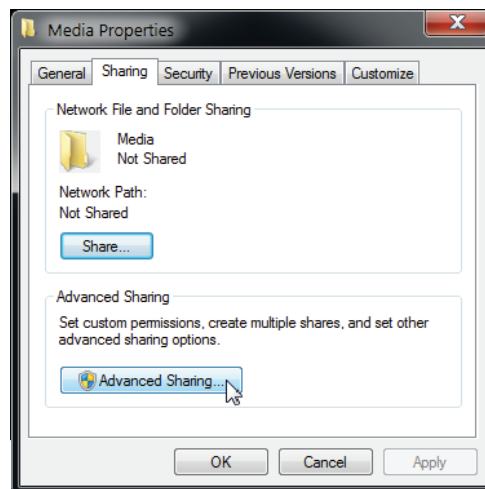
The SMD 101 can access shared folders and files of devices on the same network running various operating systems. PCs running Windows 7 must specifically share the folder to make it available to the SMD 101. The following instructions show how to share a folder on the network to make it available to the SMD 101.

To create and share a folder, start with step 1. If the folder already exists on the PC, navigate to the folder and begin with step 2.

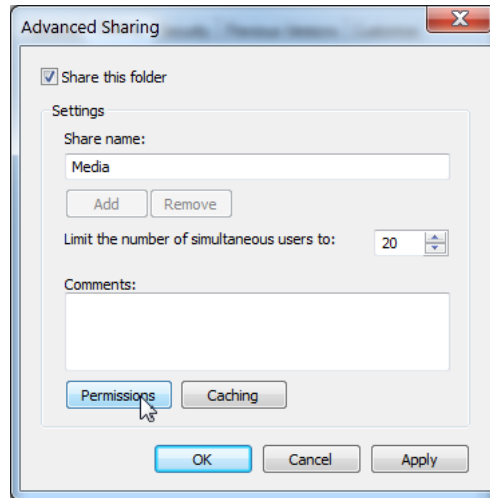
1. On the PC you want to share a folder, right-click in an empty space on the desktop, then select **New** to create a folder on the desktop named **New Folder**. With the folder name highlighted, rename it **Media**.



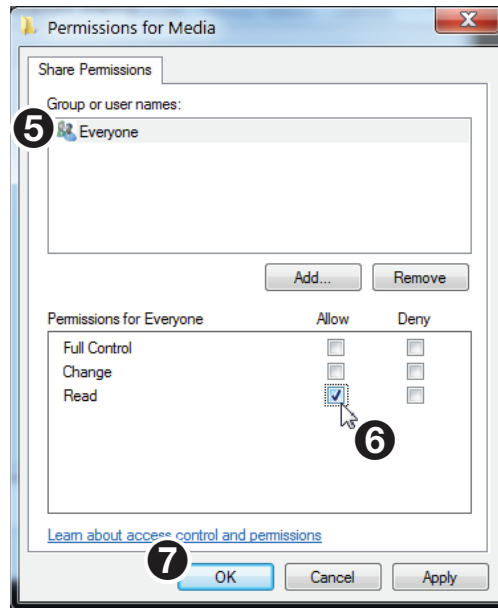
2. Right-click the folder and select **Properties**.
3. Click the **Sharing** tab, then click **Advanced Sharing...**



4. Check the **Share this Folder** box in the upper left, then click **Permissions**.



5. The Permissions for Media dialog box opens. In the **Group or user names:** panel, select **Everyone**.

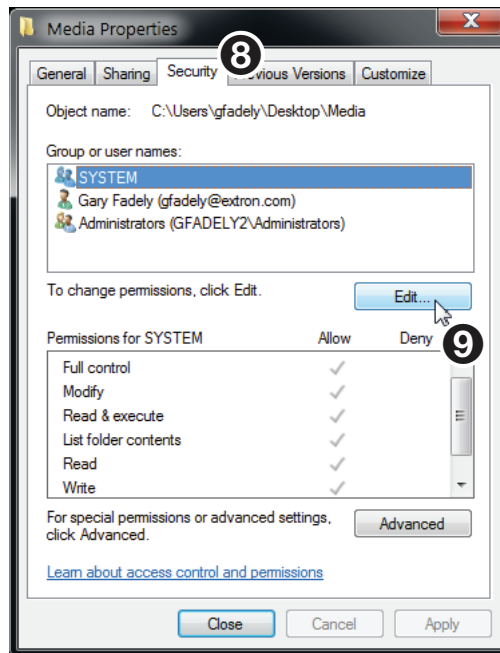


6. In the **Permissions for Everyone** panel, under the **Allow** column, check the **Read** box, then click **Apply**.

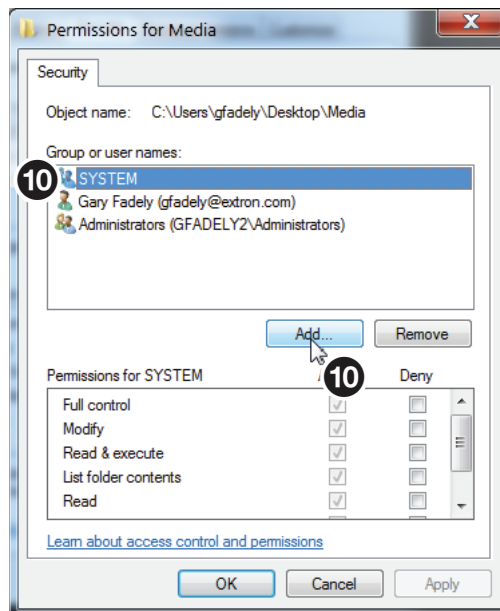
NOTE: To reduce the chance of unintentional or unauthorized changes, Extron recommends only **Read** access to folders and files that are shared on the network.

7. Click **OK** to close the **Permissions for Media** dialog box, then **OK** to close the **Advanced Sharing** dialog. The **Media Properties** dialog box reopens.

8. In the **Media Properties** dialog, select the **Security** tab.

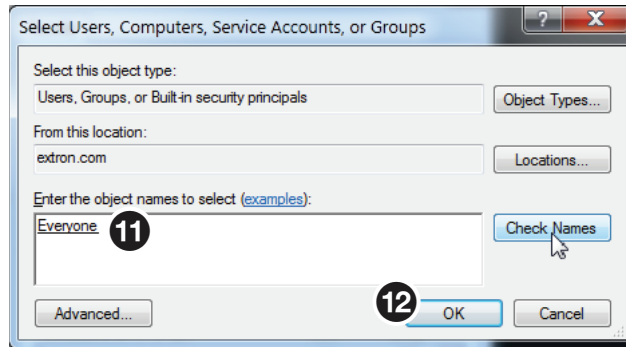


9. In the middle of the dialog, click **Edit** (see above). The **Permissions for Media** dialog box opens.

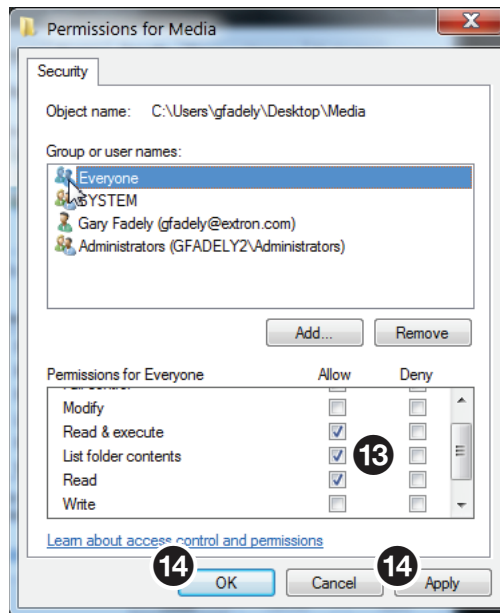


10. In the **Group or user names:** panel, select **System**, then click **Add**.

11. In the **Enter the object names to select (examples):** field, enter Everyone, then click **Check Names**. Everyone is underlined.



12. Click **OK**. The **Security** dialog box opens.
13. In the **Permissions for Everyone** panel, under the **Allow** column, if they are not already, make certain **Read & execute**, **List folder contents**, and **Read** are checked.

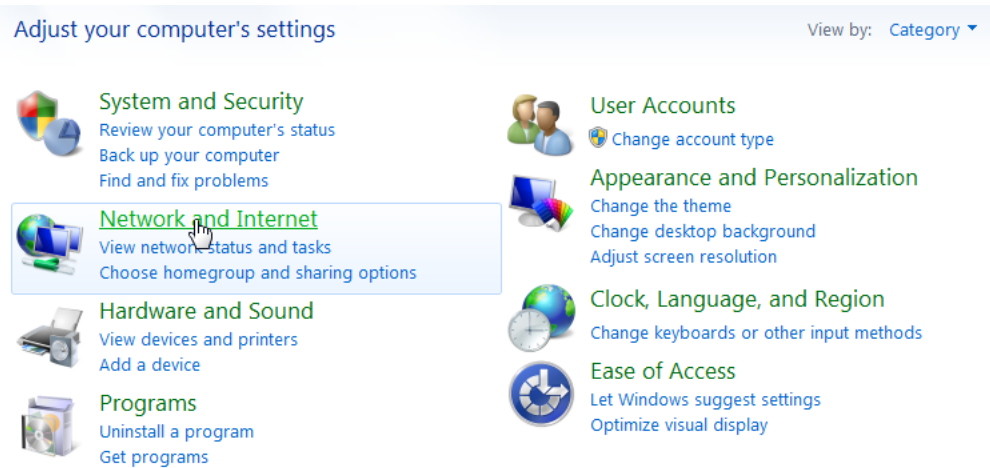


14. Click **Apply**, then **OK** to exit the **Security** dialog box.

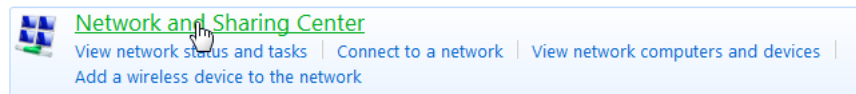
NOTE: To reduce the chance of unintentional or unauthorized changes, Extron recommends only **Read** access to folders and files that are shared on the network.

This completes the folder sharing permissions. Close all open dialog boxes.
Next the sharing properties must be configured.

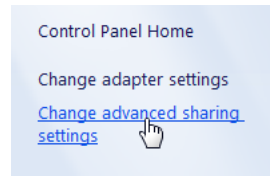
1. In the control panel, click **Network and Internet**.



2. Click **Network and Sharing Center**.



3. Click **Change advanced sharing settings** on the left side of the dialog.



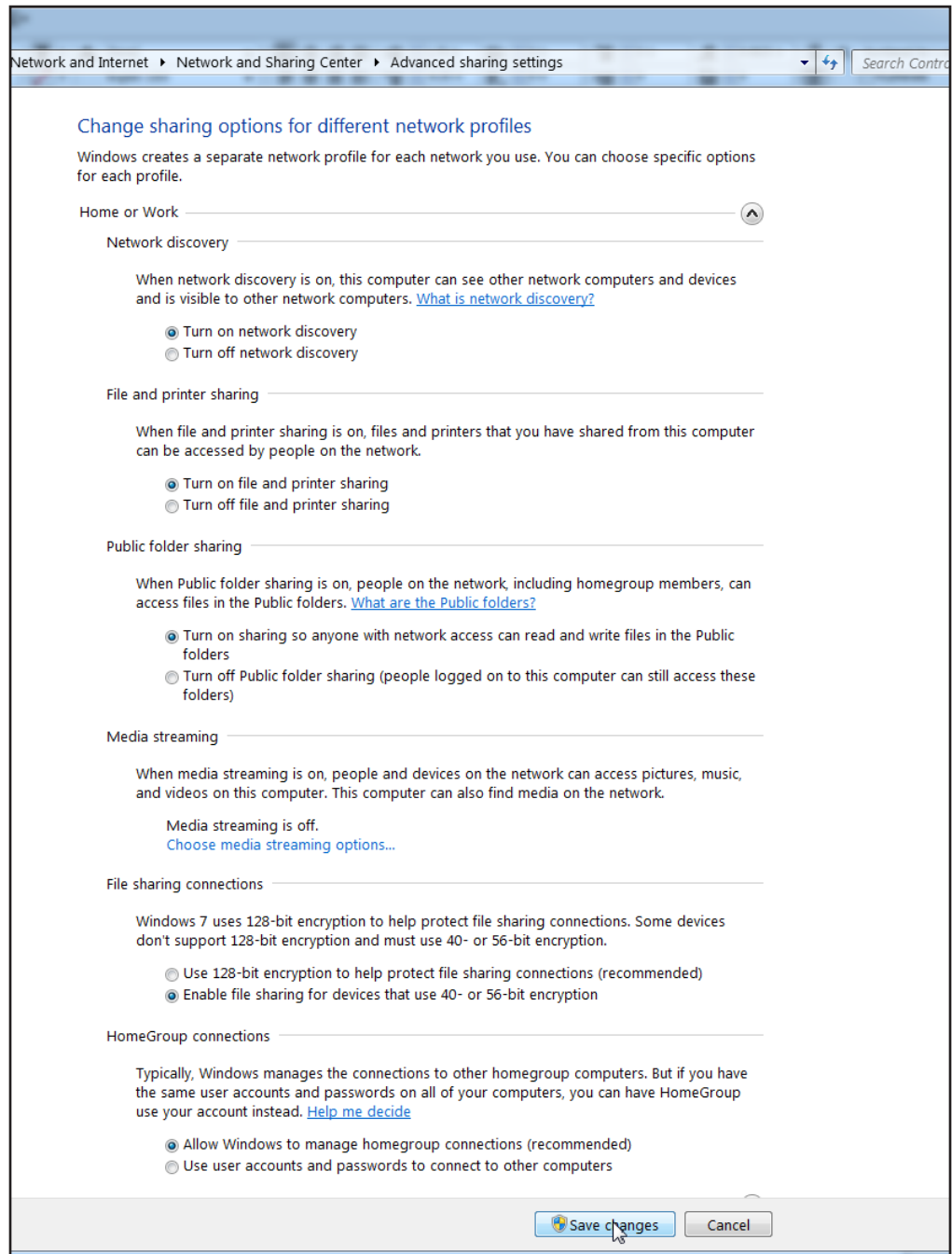
4. Click on the down arrow icon to expand the **Home or Work** option.

Change sharing options for different network profiles

Windows creates a separate network profile for each network you use. You can choose specific options for each profile.



5. On the expanded **Home or Work** panel make the following selections:
- **Network Discovery** = On
 - **File and Printer Sharing** = On
 - **Public Folder Sharing** = On
 - **File Sharing Connections** = Enable File Sharing for Devices that use 40- or 56-bit encryption.
 - **HomeGroup Connections** = Allow Windows to manage homegroup connections.
 - **Password Protected Sharing** = **Off** (this selection may or may not be visible).



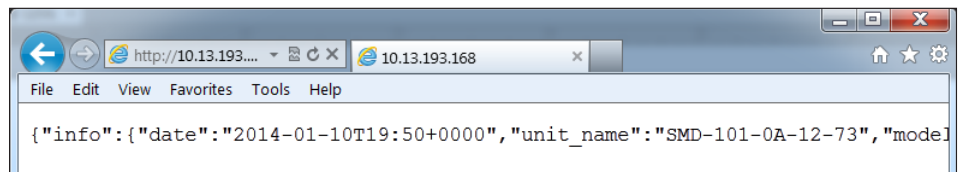
6. Click **Save Changes**, then close the control panel.
File and folder sharing is now available on the PC.

Copying Config Files Using Internet Explorer

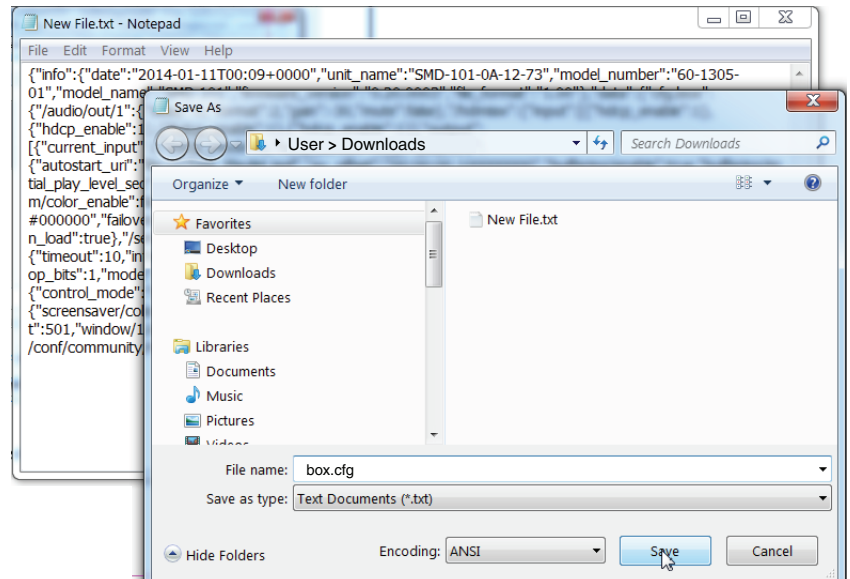
Internet Explorer does not automatically save the SMD 101 config files to the host computer (see [Configuration panel](#) on page 37), but attempts to open them instead. The box.cfg and ip.cfg files must be saved using a text file copy.

To save a configuration file using IE:

1. Open the web-interface for the SMD 101 (see [Accessing the Web-based User Interface](#) on page 14).
2. Open the Advanced Configuration page (see [Advanced Configuration Page](#) on page 34).
3. Save the **box** configuration file (see [Firmware Loader](#) on page 36).
4. When the configuration file is saved, a new browser tab automatically opens and displays the contents of the configuration text file.



5. Press <CTL+A> (or triple-click anywhere in the text line) to select the entire contents of the file, then <CTL+C> to copy the full text to the clipboard.
6. Open a text program (such as Notepad) and paste the text line using <CTL+V> or **Edit>Paste** from the toolbar.
7. Choose a location for the file, then select **File>SaveAs** from the toolbar.
8. In the **Save As** dialog, rename the file **box.cfg**.
9. Click **Save**.



To save the IP configuration file:

1. Repeat steps 1 to 3 choosing the **IP Config** option in step 3.
2. Continue with steps 4 to 7.
3. Rename the file **IP.cfg** in step 8.
4. Click **Save**.

The two files (box.cfg and ip.cfg) are now ready for use.

To return to the SMD 101 web interface, click **Back** in the IE browser.

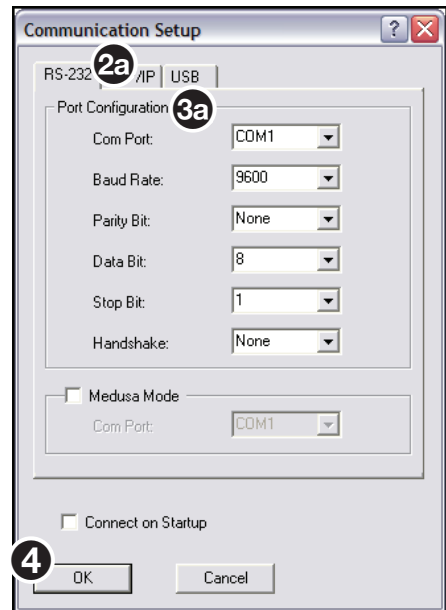
DataViewer

DataViewer is an enhanced terminal emulation program that facilitates analysis of RS-232, USB, and TCP/IP communication with Extron devices. The software allows users to send commands to a device and view the responses in ASCII or hexadecimal format. Command and response logs can be saved in text or HTML format.

DataViewer is available at www.extron.com. Download the installation file and load the program on the PC connected to the SMD 101.

Starting the DataViewer program

1. To run the DataViewer Control Program, click the desktop icon.
2. The communications setup dialog box opens.
 - a. Select the Comm Port (RS-232) tab (shown with the correct protocol settings at right) if using the rear panel RS-232 port, or



- b. Select the USB tab if using the front panel config port.
3. Select the startup options:
 - a. If RS-232 is selected, configure the protocol settings, then click **OK** to always use this port and settings when starting the DataViewer program.
 - b. If USB is selected, choose **Extron USB Device** in the drop-down window and click **OK**.
To automatically connect to the SMD 101, select **Auto-connect on startup**.
 4. Click **OK** to start using the program.

You are now ready to configure DataViewer or begin entering commands.

Use the DataViewer help file for more information on the program.



Glossary

Advanced Audio Coding (AAC) — A standardized compression and encoding scheme for lossy (low quality) digital audio. Higher bit rates provide higher quality. Part of the MPEG-2 and MPEG-4 specifications. The SMD 101 supports AAC-LC (MPEG-2 part 7, MPEG-4 part 3, sub-part 4 and part 14, MP4 audio).

Advanced Video Coding (AVC) — Video compression format, H.264/MPEG-4 part 10. See the **H.264 (MPEG-4 AVC)** definition.

Address Resolution Protocol (ARP) — A protocol for assigning an IP address to a device based on the device MAC (Media Access Control) address or physical machine address, that maintains a table showing the correlation between the two.

B-frames — Bi-predictive frames (B-frames) reference video frames before and after the current frame. They offer significantly better compression than I or P frames, but are not available in Baseline profile.

Bandwidth — A measure of available (or used) data communication resources. The total range of frequencies or bit rate required to pass a specific signal without significant distortion or loss of data. The maximum bit rate at a specified error rate, expressed in bits per second (bps). The device bandwidth should be wider than the highest possible bandwidth of the signals it could be required to process.

Bit rate — The number of bits that are conveyed or processed per unit of time. Bit rate is quantified using the bits per second (bit/s) unit, often in conjunction with an SI prefix such as kilo- (kbit/s or kbps), mega- (Mbit/s or Mbps), or giga- (Gbit/s or Gbps).

Codec — A hardware device or software program used to encode or decode a digital data stream or signal. Loosely, a combination of coder-decoder or compressor-decompressor.

Compression — Reducing the amount of data required to represent a picture (or a stream of pictures) and sound before sending or storing it.

Constant Bit Rate (CBR) — This scheme adjusts the output bit rate so that it stays very close to the specified target bit rate.

Constrained Variable Bit Rate (CVBR) — This scheme is similar to Variable Bit Rate (VBR), but sets a maximum allowed bit rate that the encoder cannot exceed.

Data bits — The number of bits used to represent one character of data. Data bits can be 7, 8, or 16, but most serial devices use 8 bits for ASCII characters.

DDC — Display Data Channel (DDC) is a bi-directional communications standard developed by VESA (Video Electronics Standards Association) that defines a universal data transmission standard for the connectivity between display devices and computers.

Decoder — A hardware device or software program used to decompress (decode) or change a signal from one format to another or convert a digital signal into analog. The SMD 101 is a decoder that converts compatible digital AV streams into a video and audio HDMI signal or to HDMI AV plus analog audio.

Dynamic Host Configuration Protocol (DHCP) — A network protocol that enables a server to automatically assign unique network addresses (IP address, subnet mask, gateway) to a device using a defined range of numbers configured for the network.

Domain Name System (DNS) — A database system that translates domain names (such as www.extron.com) into IP addresses.

Dynamic IP address — An IP address that is automatically assigned to a client device in a TCP/IP network, typically by a DHCP server. Network devices that serve multiple user, such as servers and printers, are usually assigned a static (unchanging) IP address.

Elementary Stream — Raw H.264 video or raw AAC audio, not wrapped by additional headers.

Encoder — A hardware device or software program used to compress (encode) or change a signal from one format to another or convert an analog signal into a digital data stream. The SME 100 is an encoder that converts analog audio and video into digital streams.

Extended Display Identification Data (EDID) — A data structure used to communicate video display information, including native resolution and vertical interval refresh rate requirements, to a source device over the Display Device Channel (DDC). The source device outputs the optimal video format for the display based on the provided EDID, ensuring proper video image quality.

Ethernet — A Local Area Network (LAN) standard officially known as IEEE 802.3. Ethernet and LAN technology are used for interconnecting computers, printers, workstations, terminals, services, and similar devices, within the same building or campus. Ethernet operates over twisted pair and over coaxial cable at speeds starting at 10 Mbps. For LAN interconnectivity, Ethernet is a physical link and data link protocol reflecting the two lowest layers of the OSI Reference Model.

File Transfer Protocol (FTP) — A protocol that is used to transfer files from one host to another host over a TCP-based network (such as the Internet). Also see Secure File Transport Protocol (SFTP) for more information.

Gateway — A router or proxy server between networks, or a network node equipped to interface with another network that uses different protocols (an entrance and exit into a communications network).

Group of Pictures (GOP) — A group of successive pictures within a coded video stream. A GOP begins with an I-frame containing the full spatial resolution and data of a video frame. Predictive frames (P-frames) follow I-frames and contain data that has changed from the preceding I-frame. Bi-predictive frames (B-frames) reference frames before and after the current frame.

H.264 (MPEG-4 AVC) — H.264/MPEG-4 Part 10. A block oriented, motion-compression-based codec standard developed by the ITU-T Video Coding Experts Group (VCEG) together with the ISO/IEC Moving Picture Experts Group (MPEG).

HDMI — High-Definition Multimedia Interface (HDMI®): an interface for the digital transmission of high definition video, multi-channel audio, and control signals, over a single cable. (NOTE: The SMD 101 transmits 2-channel digital audio only.)

HDTV — High definition television with a resolution of 1080p (1920x1080p), 720p (1280x720p), or 1080i (1920x1080i).

HDTV 1080p/60 — High definition television displayed at 1920x1080 resolution (1080p; 2,073,600 pixels) with a refresh rate of 60 Hz.

Hop — In a packet-switching network, a hop is the trip a data packet takes from one router (or intermediate point) to another in the network.

Host name — This is a unique name by which a device is known on a network. It identifies a particular host in electronic communication.

Hypertext Transfer Protocol (HTTP) — A network protocol based on TCP/IP that is used to retrieve hypertext objects from remote web pages and allows servers to transfer and display web content to users.

Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS) — A networking protocol that allows web servers to transfer and display web content to users **securely**. All transferred data is encrypted so that only the recipient is able to access and read the content. It is not a protocol itself, but rather a combination of Hypertext Transfer Protocol (HTTP) on top of the SSL/TLS protocol, which adds the security capabilities of SSL/TLS to standard HTTP communications.

Internet Group Management Protocol (IGMP) — A TCP/IP communications protocol used by hosts and adjacent routers on a network to establish multicast group memberships.

When the SMD 101 is connected to a streaming media server, the IGMP multicast protocol is used to pull RTSP streams. The IGMP multicast protocol conserves network bandwidth because the streaming media server only connects to the SMD 101 when the connection to the streaming media server is made by the user. All network switches and routing equipment must be properly configured to support IGMP snooping and IGMP query to avoid flooding all endpoints with unnecessary streaming traffic.

Internet Protocol (IP) — The primary protocol that establishes the Internet. It defines addressing methods and structures for datagram encapsulation, allowing delivery of packets from a source to a destination across an internetwork based purely on addressing.

Intraframe (I-frame) — In video compression schemes, intraframes (I-frames) are primary frames that contain the full spatial resolution and data of a video frame.

IP address — A numerical label using the Internet Protocol assigned to devices in a network. The IP address for the source and destination are included in an IP datagram. A unique, 32-bit binary number (12-digit dotted decimal notation — xxx.xxx.xxx.xxx) based on version 4 of the Internet Protocol (IPv4) that identifies each sender and each receiver of information connected to a LAN, WAN, or the Internet. IP addresses can be static (see Static IP) or dynamic (see DHCP).

Java™ — A class-based, object oriented programming language developed at Sun Microsystems®, Inc. (merged with Oracle® Corporation). Programs written in Java can run on multiple platforms.

JavaScript® — A scripting programming language adding interactive features to web pages.

LAN — Local Area Network. A computer network that connects devices in a limited area, such as a building or campus, using network equipment that does not include leased communications lines.

Maximum Transmission Unit (MTU) — The maximum packet size allowed in a network data packet.

Media Access Control (MAC) — A unique hardware number given to devices that connect to the Internet. When your computer or networking device (such as a router, hub, or interface) is connected to the Internet, a table (see "ARP") relates the IP address of the device to its corresponding physical (MAC) address on the LAN. This protocol allows for several terminals or network nodes to communicate within a multi-point network, typically a local area network (LAN).

MPEG-2 — The video compression algorithm used for DVD-Video, Digital Broadcast Satellite (DBS), and Digital TV (including HDTV) delivery systems.

MPEG-4 — A patented collection of methods defining compression of audio and visual (AV) digital data. MPEG-4 allows higher amounts of data compression and encoding efficiency than MPEG-2. It also includes support for digital rights management and for interactive multimedia applications.

MPEG-4 uses include compression of AV data for streaming media on the web; CD, HD DVD, or Blu-Ray Disc distribution; voice (telephone, videophone) distribution; and broadcast television applications.

Multicast — A network technology for the delivery of information to a group of destinations simultaneously using the most efficient strategy to deliver the messages over each link of the network only once. A single stream is sent from the source to a group of devices at the same time in one transmission. Delivery is managed by network switches using the most efficient strategy to deliver the messages over each link of the network only once, and creating copies only when the links to the group of destinations split.

Network Address Translation (NAT) — A network protocol that allows multiple devices to have their own, individual, private addresses, but they share one public IP address (IPv4) for connection to the internet or other networks.

Network Time Protocol (NTP) — A protocol used for synchronizing the clocks of computer systems over networks.

Parity (or Parity checking) — An error detection technique that tests the integrity of the digital data being sent. Parity can be set to None, Even, or Odd.

Predictive frame (P-frame) — In video compression schemes, predictive frames (P-frames) follow I-frames and contain data that has changed from the preceding I-frame.

Pull streaming — Streaming method that allows users to search for content. Users specify a content source and initiate a download or view the stream. The content streaming is initiated by the end user (at the decoder rather than at the encoder).

Push streaming — A streaming method where the encoder sends content out to one (unicast) or more (multicast) decoders using one of the transport protocols. Content streaming is initiated at the encoder.

Quality of Service (QoS) — The grade of performance, such as transmission rates and error rates, of a communications channel or system. QoS provides a level of predictability and control beyond the best-effort delivery that the router provides by default (best-effort service provides packet transmission with no assurance of reliability, delay, jitter, or throughput).

Real-time Streaming Protocol (RTSP) — A network control protocol designed for use in audio visual and communications systems to control streaming media.

Real-time Transport Protocol (RTP) — An Internet Engineering Task Force (IETF) standard for streaming real-time multimedia over IP in packets.

Router — A network device that forwards packets from one network to another.

Session Announcement Protocol (SAP) — Used by source devices (encoders or servers) in conjunction with SDP to publicize the availability of a stream to decoders and players. The SAP periodically broadcasts session description information on an industry standard multicast address and port. When received by remote clients, these announcements can be used to facilitate the viewing of streams, eliminating the need for user configuration.

Session Description Protocol (SDP) — Used to describe multimedia sessions for the purposes of session announcement, session invitation, and other forms of multimedia session initiation (as defined in RFC 2327).

Secure Shell (SSH) — A network protocol that creates a secure channel used for secure communication between two computers on a network. SSH is typically used for data communication, remote shell (login) services, or command execution.

Secure Sockets Layer (SSL) — A protocol used by web servers and web browsers that creates a uniquely encrypted channel for private communications over the public Internet.

Simple Instruction Set (SIS) — A set of commands developed by Extron that allows for RS-232, USB, and TCP/IP control of certain Extron products. A command is sent from the control device to the product (using a minimal number of characters) and a response is received from the product and shown on the display of the control device.

Secure File Transfer Protocol (SFTP) — Similar to FTP, this protocol adds encryption and requires credentials for file transfers.

Simple Network Management Protocol (SNMP) — An application-layer protocol that facilitates the exchange of management information between network devices. This protocol collects (and configures) information from network devices (such as servers, hubs, switches, and routers) on an Internet Protocol (IP) network.

Static IP address — An IP address specifically (instead of dynamically [see "DHCP"]) assigned to a device or system in a network configuration. This type of address requires manual configuration of the network device or system and can only be changed manually or by enabling DHCP.

Stop bits — The bit or bits transmitted that signal the end of a character. Typically set to 1.

Streaming Media Player (SMP) web browser plugin — The Extron SMP web browser plugin (V1.0) provides the best streaming features to display SME 100 streams.

Streaming media (stream) — Multimedia that is constantly received by (and normally presented to) an end-user while being delivered by a streaming provider. Internet television is a commonly streamed medium.

Switch — A network switch enables communication between devices in a network by routing data between ports at the data link layer (layer 2 of the OSI model). A managed switch can be configured to transmit data only to the specific device for which the data was meant.

Telnet port — Most controllers support Telnet and use port 23 as the communication port to receive or issue commands.

Time To Live (TTL) — A value that specifies the number of router hops multicast traffic can make between routed domains when it exits a source.

Transmission Control Protocol (TCP) — A protocol developed for the Internet that provides reliable end-to-end data packet delivery from one network device to another.

Transmission Control Protocol/Internet Protocol (TCP/IP) — The communication protocol of the Internet. Computers and devices with direct access to the Internet are provided with a copy of the TCP/IP program to allow them to send and receive information in an understandable form.

Transport Streams (TS) — A form of media wrapped in MPEG-2 transport stream headers. The MPEG-2 transport headers contain information about the media.

The SMD 101 is compatible with transport streams that contain H.264 encoded video and AAC encoded audio. Transport streams containing MPEG-2 video and AC3 audio are not supported.

- **TS/UDP** — (Unicast or multicast) An MPEG-2 transport stream containing the elementary streams for the audio and video. It is sent using UDP packets.
- **TS/RTP** — (Unicast or multicast) Transport stream that is sent using RTP/UDP. RTP provides sequencing information; if the sequencing information is reordered by the network, RTP reorganizes and processes the information in the correct order. UDP would process the sequencing information out of order, making RTP performance better on larger, many hop networks.

TMDS — Transition Minimized Differential Signaling. An all-digital video transmission standard developed by Silicon Image, Inc. TMDS is the core technology used in DVI and HDMI.

Unicast — Sending messages from one device to a single network destination on a network. Having N clients of a unicast stream requires the server to produce N streams of unicast data.

User Datagram Protocol (UDP) — A connectionless, transport layer protocol that sends packets (datagrams) across networks using "best-effort" delivery. It is a relatively simple protocol that does not include handshaking.

Variable Bit Rate (VBR) — A compression scheme that adjusts the output bit rate around a specified target bit rate depending on the audio or image complexity. More bandwidth is used when the video frame is more complex and less bandwidth is used when the video frame is simple.

Extron Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America,
and Central America:
Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805
U.S.A.

Japan:
Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe and Africa:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:
Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:
Extron Asia Pte Ltd
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or if modifications were made to the product that were not authorized by Extron.

NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: 714.491.1500 or 800.633.9876 **Europe:** 31.33.453.4040
Asia: 65.6383.4400 **Japan:** 81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

Extron Headquarters +1.800.633.9876 (Inside USA/Canada Only) Extron USA - West +1.714.491.1500 +1.714.491.1517 FAX	Extron USA - East Extron USA - East +1.919.850.1000 +1.919.850.1001 FAX	Extron Europe +800.3987.6673 (Inside Europe Only) +31.33.453.4040 +31.33.453.4050 FAX	Extron Asia +65.6383.4400 +65.6383.4664 FAX	Extron Japan +81.3.3511.7655 +81.3.3511.7656 FAX	Extron China +86.21.3760.1568 +86.21.3760.1566 FAX	Extron Middle East +971.4.299.1800 +971.4.299.1880 FAX	Extron Korea +82.2.3444.1571 +82.2.3444.1575 FAX	Extron India 1800.3070.3777 (Inside India Only) +91.80.3055.3777 +91.80.3055.3737 FAX
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